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Precision and Accuracy Assessments for State and Local Air Monitoring Networks, 1984

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Research Triangle Park, NC

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SECTION 2

NATIONAL RESULTS

NATIONAL DATA REPORTING

A measure of the completeness of the precision and accuracy data reporting is the percentage of reporting organizations which were required to report data for a particular pollutant which have reported results for at least one calendar quarter for that pollutant. Table 3 shows the progress in data reporting over the years 1981 through 1984. Improvement continues for the continuous NO_2 method; however, the percentage still lags behind that for continuous CO, SO_2 and O_3 methods. Reporting for the manual methods for Pb, SO_2 and NO_2 was required by the regulations beginning January 1, 1983. Reporting for Pb is negligibly different from 1983 to 1984. Reportings for the manual methods for SO_2 and NO_2 have significantly improved from 1983 to 1984.

The reporting organizations which should have reported data for 1984 but did not are listed in Section 3.

TABLE 3. PERCENT OF REPORTING ORGANIZATIONS REPORTING PRECISION AND ACCURACY DATA

Pollutant measurement	1981	1982	1983	1984
CO	77	89	99	99
SO_2	82	93	96	97
NO_2	56	72	88	94
O_3	83	89	99	99
TSP	94	97	99	99
Pb	—	—	93	92
SO_2 (manual)	—	—	75	80
NO_2 (manual)	—	—	86	100

NATIONAL ACTIVITY IN PERFORMING PRECISION CHECKS AND ACCURACY AUDITS

A review of Tables 4 and 5 clearly indicates the considerable increase in the total number of precision checks from the beginning of the PARS system through 1984 for all pollutant methods. The increase in effort resulted because of the effectivity of the regulation requirements for P and A data

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16. ABSTRACT

Precision and accuracy data obtained from state and local agencies during 1984 are summarized and compared to data reported earlier for the period 1981-1983. A continual improvement in the completeness of the data is evident. Improvement is also evident in the size of the precision and accuracy results reported. Annual results from each reporting organization are also given so that these organizations can compare their results for 1984 with their earlier results and with other organizations. A set of upper and lower limits for precision and accuracy is also proposed -- above these limits corrective action should be taken.

A comparison of the precision and accuracy data from the Precision and Accuracy Reporting System and that from the independent performance audit program conducted by the Environmental Monitoring Systems Laboratory is given.

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PRECISION AND ACCURACY ASSESSMENTS FOR STATE AND LOCAL AIR MONITORING NETWORKS
1984

by

Raymond C. Rhodes
Quality Assurance Division
Environmental Monitoring Systems Laboratory

E. Gardner Evans
Monitoring and Assessment Division
Environmental Monitoring Systems Laboratory

ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

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FOREWORD

Measurement and monitoring research efforts are designed to anticipate potential environmental problems, to support regulatory actions by developing an in-depth understanding of the nature and processes that impact health and the ecology, to provide innovative means of monitoring compliance with regulations, and to evaluate the effectiveness of health and environmental protection efforts through the monitoring of long-term trends. The Environmental Monitoring Systems Laboratory, Research Triangle Park, North Carolina, has the responsibility for assessment of environmental monitoring technology and systems; implementation of agency-wide quality assurance programs for air pollution measurement systems; and supplying technical support to other groups in the Agency including the Office of Air and Radiation, the Office of Toxic Substances, and the Office of Enforcement.

Ambient air quality data collected by states and local agencies are used in planning the nation's air pollution control strategy, in determining if National Ambient Air Quality Standards are being achieved, and in determining long-term trends of air quality. Prior to the regulations of May 10, 1979, the procedures used in site selection, controlling equipment, and calculating and validating data varied considerably among agencies. These regulations serve to improve and make more uniform the quality assurance programs of the state and local agencies and to require the assessment and reporting of data quality estimates for precision and accuracy. Reporting of precision and accuracy data was required beginning for calendar year 1981. Previous reports summarized the results for 1981, 1982, and 1983. This report summarizes and evaluates the results for 1984.

John C. Puzak
Acting Director
Environmental Monitoring Systems Laboratory
Research Triangle Park, North Carolina

ABSTRACT

Precision and accuracy data obtained from State and local agencies during 1984 are summarized and evaluated. Some comparisons are made with the results previously reported for 1981, 1982, and 1983 to determine the indication of any trends. Some trends indicated continued improvement in the completeness of reporting of precision and accuracy data. The national summaries indicate a further improvement in the precision and accuracy assessments of the pollutant monitoring data collected. The annual results from each reporting organization are given so that comparisons may be made from 1981 to 1984 and also with other reporting organizations.

A comparison of the precision and accuracy data from the Precision and Accuracy Reporting System with these from the independent performance audit program conducted by the Environmental Monitoring Systems Laboratory is given.

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SECTION 1

INTRODUCTION

The purpose of this document is to report the third year of data from the Precision and Accuracy Reporting System (PARS). Federal regulations promulgated on May 10, 1979, require quality assurance precision and accuracy (P and A)* data to be collected. Collection started January 1, 1981, according to requirements set forth in 40 CFR Part 58 Appendix A.[1] These requirements provide for more uniform Quality Assurance programs and specific precision and accuracy assessment and reporting requirements across all State and local air monitoring agencies.

The major portion of this report consists of summarizations and evaluations of the P and A data obtained by the efforts of the States and local agencies. In addition, comparisons have been made of the accuracy data collected for PARS with the results of the National Performance Audit Program (NPAP) which has been an ongoing program conducted by the Environmental Monitoring Systems Laboratory (EMSL) since the early 1970's.

These summarizations and evaluations of precision and accuracy data serve the following purposes:

1. Quantitative estimates of the precision and accuracy of their ambient air monitoring data are available to State and local agencies.
2. A comparison of the data from all the agencies may indicate the need to improve quality assurance systems in specific reporting organizations.
3. An evaluation of the results may indicate a need for improvement in monitoring methodology.
4. The assessments provide users of data from the State and Local Air Monitoring Stations (SLAMS) network a quantitative estimate of the precision and accuracy of the ambient air quality data.

---

*When one speaks of precision and accuracy of measurement data,[2] one really means the precision and accuracy of the measurement process from which the measurement data are obtained. Precision is a measure of the "repeatability of the measurement process under specified conditions." Accuracy is a measure of "closeness to the truth."

Ambient air quality data, collected by States and local agencies since 1957, have been stored in the National Aerometric Data Bank (NADB). These data are used in (1) planning the nation's air pollution control strategy, (2) determining if the National Ambient Air Quality Standards are being achieved, and (3) determining long-term trends of air quality. Prior to the EPA air monitoring regulations of May 10, 1979, the procedures used in selecting monitoring sites, operating and controlling the equipment, and calculating, validating and reporting the data varied considerably among agencies. Frequently the procedures being used were not well-documented. These conditions made it difficult to intercompare data from different sites and agencies. Furthermore, little information was available on the reliability of the monitoring data.

To help alleviate these problems, EPA's air monitoring regulations imposed uniform requirements on network design, siting, quality assurance, monitoring methods, and data reporting after December 30, 1980. For example, only EPA reference, equivalent, or other EPA-approved air monitoring methods were to be used. Also, calibration standards were to be traceable to the National Bureau of Standards (NBS) or other authoritative standards. Further, the quality assurance systems of the states were required to be documented and approved by the EPA Regional Offices. Finally, the reporting organizations must also follow specific procedures when assessing the P&A of their measurement systems and must report the P&A data to EPA quarterly. Starting January 1, 1981, these regulations became effective for National Air Monitoring Sites (NAMS), and beginning January 1, 1983, for all State and Local Air Monitoring Stations (SLAMS).

The precision assessments were determined by performing repeated measurements of ambient-level "calibration" gases at two-week intervals for continuous methods, or by obtaining duplicate results from collocated samplers for manual methods. Table 1 summarizes the requirements for performing precision checks. The accuracy assessments were generally determined by analyzing blind audit materials traceable to NBS. Table 2 shows the concentration levels. During each calendar year, each site or instrument must be audited at least once. Details concerning the specific procedures and computations used to assess P&A are contained in the regulations.

TABLE 1. REQUIREMENTS FOR PERFORMING PRECISION CHECKS FOR SLAMS NETWORK

Parameter	Precision check	Frequency
CO (continuous analyzer)	8 - 10 ppm	Once each 2 weeks
SO_2, NO_2, and O_3 (continuous analyzer)	0.08 - 0.10 ppm	Once each 2 weeks
TSP, SO_2, and NO_2 (manual)	Collocated sampler (Ambient concentration)	Once each 6 days
Pb	Duplicate strips (Ambient concentration)	Once each 6 days

TABLE 2. CONCENTRATION LEVELS FOR CONDUCTING ACCURACY AUDITS OF SLAMS NETWORK

Parameter	Level 1	Level 2	Level 3	Level 4
SO_2, NO_2, O_3 (continuous)	0.03-0.08 ppm	0.15-0.20 ppm	0.35-0.45 ppm	0.80-0.90 ppm
CO	3-8 ppm	15-20 ppm	35-45 ppm	80-90 ppm
TSP (flow only)		1.13-1.70 m^3/min		
SO_2 (manual)*	0.013-0.020 ppm	0.033-0.040 ppm	0.053-0.059 ppm	
NO_2 (manual)*	0.018-0.028 ppm	0.046-0.055 ppm	0.074-0.083 ppm	
Pb**	0.6-1.8 $\mu g/m^3$	3.5-5.9 $\mu g/m^3$		

*Concentration levels corresponding to flow rates of .2 L/min
**Concentration levels corresponding to flow rates of 50 cfm.

When a request is made to the NADB for ambient air quality monitoring data, the requestor receives the P and A data along with the routine monitoring data. The requestor, or user, of the data can feel more confident that the data are of the quality indicated by the assessments and that the data have been obtained from an agency having a planned and documented quality assurance system. The EPA can also rely on the data in producing its control strategies and determining whether standards have been met.

for the NAMS sites on January 1, 1981 and for the SLAMS on January 1, 1983. The reduction in the manual NO_2 and SO_2 methods has resulted from the replacement of the manual methods with continuous analyzers.

For the manual methods, Table 4 shows the average number of data pairs per collocated site for precision checks and the average number of accuracy audits per sampler. If the collocated samplers are operated every sixth day, there should be 365/6 = 61 data pairs per year, assuming that all the results are above the detection limit. This level of precision checks is being approached for the TSP, Pb, and NO_2 methods, but for the manual SO_2 method, the number of precision checks is only about 50 percent of the required number. The regulations require that each TSP sampler/site be audited for accuracy at least once each year, and that the laboratory for the other manual methods be audited at least twice per quarter. The computed average number of audits per TSP sampler is well above the required frequency. There was an increase in 1984 in the number of Pb samplers whereas the number of other types of manual samplers decreased somewhat.

For the continuous methods, the minimum frequency for precision checks is once every two weeks or 26 per year. Table 5 indicates that in 1983 and 1984 about 60 precision checks are made per analyzer for the SO_2 method and between 35 and 40 for the other methods. The regulations require at least one accuracy audit per analyzer/site per year. The table indicates that this requirement is being met on the average for only the CO method. The average number of audits per analyzer for the SO_2, NO_2 and O_3 methods indicates that from 6 to 21 percent of the analyzers are not being audited as required by the regulations. (Note: The tabulated values consider only the audits at the three lower concentration levels. Analyzers requiring level four audits, e.g., episode monitors, are not considered.)

A comparison can be made between the average number of samplers for which PARS data are reported and the number of SLAMS/NAMS sites in the nation:

	Continuous methods				Manual methods			
	SO_2	NO_2	O_3	CO	TSP	Pb	SO_2	NO_2
No. SLAMS/NAMS sites	540	252	600	439	2477	382	14	15
Avg. no. samplers reporting PARS data	630	240	579	424	2650	492	36	50

It appears that for all of the manual methods and for continuous SO_2, P and A data from more samplers are received than exist as SLAMS/NAMS sites. Presumably, these extra or additional samplers are being used for special purpose monitoring and/or both samplers at collocated sites (manual methods) are being counted.

For the continuous methods NO_2, O_3, and CO, P and A data for all SLAMS/NAMS sites are not being reported, but overall the percentage not being reported is small.

1984 RESULTS FROM THE PARS PROGRAM

Estimates of precision and accuracy are required to be computed and reported for each calendar quarter by each Reporting Organization (a State or local agency) as percentage deviation values. For precision, the repeatability for each check is measured as the deviation from the expected value as a percentage of the expected value. For accuracy, the deviation of the audit value from the true value is measured as a percentage of the true value. For both precision and accuracy, 95 percent probability limits are computed for the percentage values from the average and standard deviations of the individual percentage values:

TABLE 4. YEAR-TO-YEAR ACTIVITY OF PRECISION AND ACCURACY ASSESSMENTS FOR THE MANUAL METHODS

Pollutant	Year	Avg. no. of samplers	Precision			Accuracy	
			Avg. no. of collocated sites	No. of valid collocated data pairs	No. of data pairs per site	No. of audits x levels*	No. of audits per sampler
TSP	1981	2,334	317	13,335	42.1	5,840	2.5
	1982	2,538	338	16,281	48.2	6,461	2.6
	1983	2,662	342	16,816	49.2	6,989	2.6
	1984	2,650	338	17,152	50.8	7,436	2.8
Pb	1981	73	13	473	36.4	581	4.0
	1982	164	32	1,704	53.2	655	2.0
	1983	452	76	3,885	51.1	1,389	1.5
	1984	492	92	3,937	42.8	1,657	1.7
SO_2	1981	172	34	965	28.4	711	1.4
	1982	63	21	706	33.6	551	2.9
	1983	46	15	389	25.9	301	1.1
	1984	36	10	297	28.3	203	1.9
NO_2	1981	185	38	1,422	37.4	769	4.2
	1982	83	25	1,168	46.7	583	2.3
	1983	77	25	1,324	53.0	348	1.5
	1984	50	13	691	53.2	175	1.2

*Levels 1, 2, and 3 only.

TABLE 5. YEAR-TO-YEAR ACTIVITY OF PRECISION AND ACCURACY ASSESSMENTS FOR THE CONTINUOUS METHODS

			Precision		Accuracy	
Pollutant	Year	Avg. no. of analyzers	No. of precision checks	Precision checks per analyzer	No. of accuracy audits x levels*	No. of audits per analyzer
CO	1981	282	8,248	29.2	856	1.01
	1982	354	13,089	37.0	1,180	1.11
	1983	447	15,714	35.2	1,501	1.12
	1984	424	14,692	34.7	1,265	0.99
SO_2	1981	420	10,851	25.8	1,016	0.81
	1982	566	23,144	36.6	1,248	0.73
	1983	633	36,887	58.3	1,625	0.86
	1984	630	38,312	60.8	1,500	0.79
NO_2	1981	127	2,498	19.7	320	0.84
	1982	193	6,876	35.6	442	0.76
	1983	235	9,299	39.6	635	0.90
	1984	240	8,653	36.0	589	0.82
O_3	1981	404	10,536	26.1	1,162	0.96
	1982	514	18,964	36.9	1,328	0.86
	1983	598	21,342	35.7	1,705	0.95
	1984	579	20,031	34.6	1,629	0.94

*Levels 1, 2, and 3 only.

$$\overline{D} \pm 1.96\ S$$

where $\overline{D}$ = the average of the individual percent differences;
S = the standard deviation of the individual percent differences;*
1.96 = the multiplication factor corresponding to 95% probability.

It is these upper and lower 95% probability limits which are reported and discussed in this report.

Moreover, it should be noted that the data and the evaluations presented in this report include any outlier values which may have been reported by the States and local agencies. It is possible that the presence of outliers might influence such comparisons by having undue impact on average values for individual reporting organizations.

The probability limits presented throughout this report for states, regions, and the nation have been calculated using the formulas shown in Appendix B and thereby most appropriately reflect the total variability within the entity involved. (Note: Probability limit values in this report in Tables 6, 7, 12, and 14 and Figures 1 through 10 cannot be validly compared with corresponding tables and figures of previous reports.[3,4] The limits given in this report are generally wider than corresponding limits of previous reports for the reasons discussed in Appendix B.)

Table 6 exhibits the national probability limits for each of the manual methods. By noting the numbers of valid collocated data pairs (17,152) and the number of audits (7,436) performed for TSP, one can appreciate the amount of effort being expended in this country to obtain these data quality assessments.

---

*For the precision of manual methods obtained from paired observations, the standard deviation, S, is divided by $\sqrt{2}$, to obtain variability estimates that apply to individual reported values.

TABLE 6. NATIONAL PRECISION AND ACCURACY PROBABILITY LIMIT VALUES FOR MANUAL METHODS FOR 1984

	Precision			Accuracy						
					Probability limits (%)					
	Number of valid collocated data pairs	Probability limits (%)		No. of audits	Level 1		Level 2		Level 3	
Pollutant		Lower	Upper		Lower	Upper	Lower	Upper	Lower	Upper
TSP	17,152	-16	+17	7,436	—	—	-8	+8	—	—
Lead	3,937	-18	+20	1,657	-17	+15	-11	+10	—	—
Sulfur dioxide	297	-33	+31	203	-20	+9	-14	+7	-12	+7
Nitrogen dioxide	691	-27	+27	175	-8	+10	-7	+8	-6	+7

The precision limits reflect the repeatability of the methodology used in the field to collect and analyze the samples at ambient levels. The spread of the limits may be somewhat inflated due to measurements at relatively low concentration levels.

The accuracy of the manual methods indicates the limits at predetermined concentration levels for the chemical analysis performed in the samples for lead, sulfur dioxide, and nitrogen dioxide. For the TSP method, the accuracy measurement is for the flow rate only. The probability limits for manual accuracy are very good and reflect the quality of work done in the chemical laboratories for lead, sulfur dioxide, and nitrogen dioxide analyses, and in the field for flow rate measurement for the TSP method. Because of the continual replacement of the manual SO_2 and NO_2 methods with continuous methods, further discussion of the manual methods is limited. The detailed results, however, are tabulated in Appendix D for each reporting organization.

The precision and accuracy limits for automated methods are presented in Table 7. Apparent from the number of precision checks, for example 38,312 for SO_2, the effort expended is appreciable for the collection of quality assurance precision and accuracy data, but necessary to assess data quality. Details of the results are discussed later.

TABLE 7. NATIONAL PRECISION AND ACCURACY PROBABILITY LIMIT VALUES FOR AUTOMATED ANALYZERS FOR 1984

	Precision			Accuracy									
	No. of precision checks	Probability limits (%)		No. of audits		Probability limits (%)							
				Total	Level 4	Level 1		Level 2		Level 3		Level 4	
		Lower	Upper			Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
CO	14,692	-9	+8	1,288	23	-14	+13	-9	+8	-9	+8	-10	+9
SO_2	38,312	-12	+11	1,666	166	-16	+14	-12	+11	-12	+11	-13	+12
NO_2	8,653	-14	+13	613	24	-21	+20	-13	+12	-13	+10	-18	+14
O_3	20,031	-12	+10	1,773	144	-16	+14	-12	+10	-11	+10	-6	+5

NATIONAL PRECISION RESULTS COMPARISON

Figure 1 shows the national probability limits for precision for the various methods. With data from four years, some minor trends are evident. Some slight improvement, as measured by a reduction in the spread of the limits, is noted particularly for the manual methods for Pb, SO_2, and NO_2. The slight but persistent negative bias for the continuous SO_2 method indicates that on the average there is some negative instrument drift from the most recent calibration or instrument adjustment to the time of the biweekly precision check.

Although the manual methods for Pb, SO_2, and NO_2 were not required to be reported until 1983, a number of agencies began reporting in 1981. The results for Pb show a decided and continuing improvement. The manual SO_2 and NO_2 methods are much more variable than the continuous methods. However, they do show considerable improvement over the four-year period.

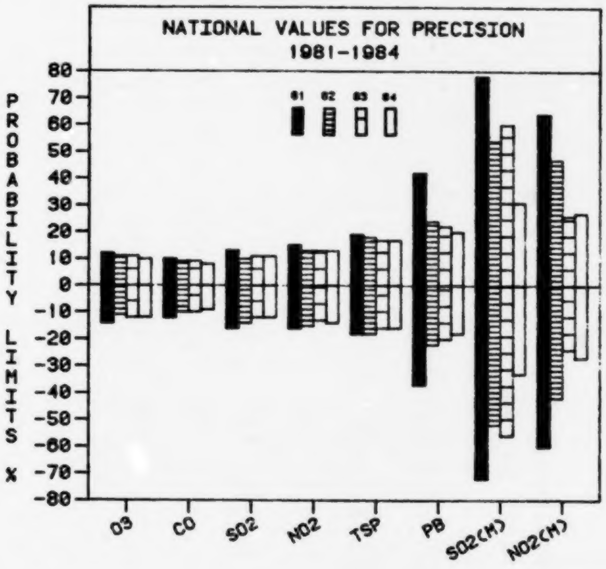


Figure 1. National precision probability limits for 1981 through 1984.

NATIONAL ACCURACY RESULTS COMPARISON

Figures 2a and 2b show the national probability limits for accuracy audits for the continuous and manual methods, respectively. Improvement for the manual methods is not evident except perhaps for TSP and SO_2. The variability for the Pb method has increased, and for the NO_2 method has shown no definite trend. Slight improvement is evident for all the continuous methods. The continuous methods for SO_2 and NO_2 show more inaccuracy than all other methods. However, it is pointed out that the accuracy audits for the manual methods check only a portion of the measurement method.

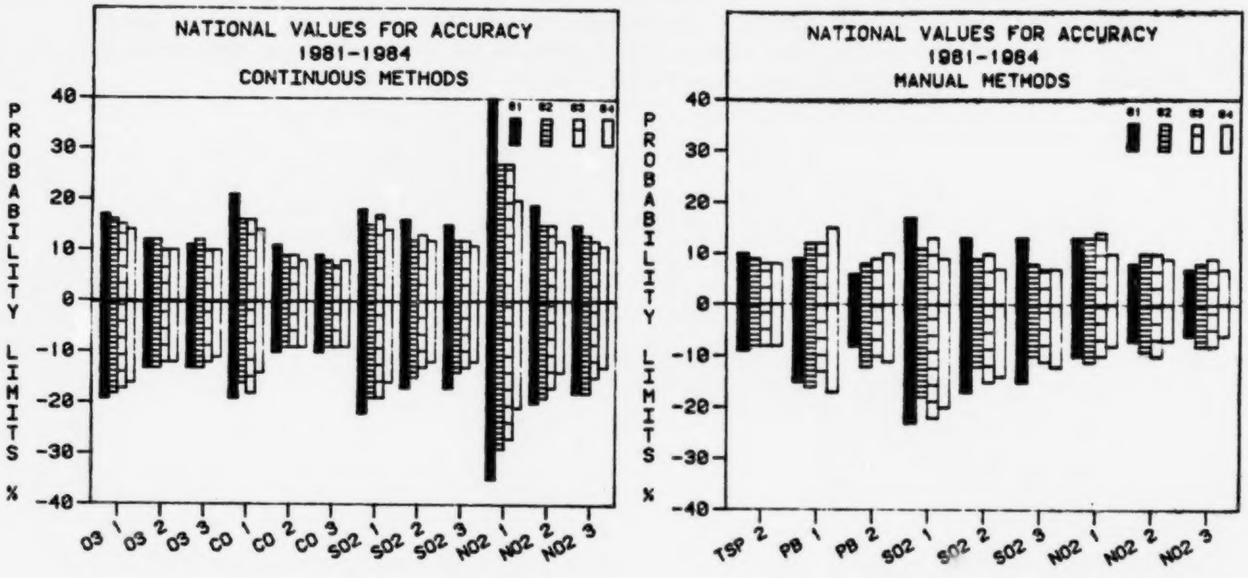


Figure 2. National accuracy probability limits for 1981 through 1984.

Although the continuous NO_2 method is more variable than the other methods, it has shown the greatest improvement, particularly for the level 1 concentration.

The general, and expected, pattern of variability across levels is very evident, with the greatest percentage variability at the lowest concentration levels. The slight negative biases for the continuous SO_2 method is consistent across all three levels. A possible cause is that, on the average, a negative drift occurs with these analyzers from the time of last calibration or instrument adjustment until the time of the accuracy audit.

NATIONAL FREQUENCIES

Table 8 contains the 1984 frequency distributions for precision probability limits and accuracy probability limits at levels 1, 2, 3, and 4. The frequencies are based on the total number of reporting-organization-quarters of data. The individual quarter of data consists of an upper and lower probability limit for precision, and upper and lower probability limits for accuracy for each of the levels. The narrower the distribution, the better the data quality. For example, for precision for CO, the upper 5 percentile value for the upper limit is +15%, and the lower 5 percentile value for the lower limit is -18%. It can be seen from both Figure 2 and Table 8 that CO shows the tightest range of the pollutants presented. The variabilities shown in Table 8 are consistent with those shown in Figures 1 and 2. And, in general, the variabilities are less for 1984 than for the corresponding values reported for previous years. The 95th percentiles provide criteria beyond which a reported probability limit may be considered excessive and for which the computation should be rechecked or the measurement system investigated and corrected, if so indicated.

TABLE 8. CUMULATIVE FREQUENCY DISTRIBUTIONS OF QUARTERLY PROBABILITY LIMITS FOR ALL REPORTING ORGANIZATIONS (1984)

MANUAL METHODS

POLLUTANT	NUMBER OF	LOWER PROBABILITY LIMIT												STD	UPPER PROBABILITY LIMIT												STD
LEVEL	REP.ORG.-QTR	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV
I11101 - TSP																											
PRECISION	555	-68	-43	-23	-19	-13	-09	-06	-03	-02	+02	+15	-10	8.2	-07	-04	+03	+04	+06	+10	+15	+22	+28	+54	+98	+12	9.8
ACC-LVL 2	544	-27	-20	-15	-12	-09	-06	-03	-02	-00	+03	+04	-06	4.5	-11	-03	-00	+01	+03	+05	+08	+12	+15	+25	+41	+06	5.0
I12128 - PB																											
PRECISION	301	-59	-50	-31	-25	-17	-10	-06	-04	-03	-00	+08	-13	9.9	-04	-00	+02	+04	+06	+10	+19	+26	+39	+58	+99	+14	12.6
ACC-LVL 1	271	-92	-33	-17	-15	-11	-07	-03	-01	+01	+05	+14	-07	8.2	-82	-10	-02	-00	+02	+05	+09	+17	+22	+36	+37	+06	9.4
ACC-LVL 2	289	-38	-22	-15	-13	-08	-05	-02	-01	+01	+10	+13	-06	5.6	-18	-11	-02	-00	+02	+05	+07	+13	+17	+27	+59	+05	6.6
I42401 - SO2																											
PRECISION	21	-99	-99	-99	-81	-40	-20	-08	-00	-00	-00	-00	-30	31.0	-04	-04	-03	-00	-00	+24	+46	+84	+99	+99	+99	+30	32.2
ACC-LVL 1	25	-31	-31	-28	-27	-18	-12	-08	-05	-03	-02	-02	-14	8.0	-12	-12	-03	-03	+02	+06	+09	+13	+13	+15	+15	+05	6.2
ACC-LVL 2	25	-27	-27	-24	-23	-11	-08	-04	-01	-00	-00	-00	-09	7.1	-06	-06	-00	-00	-00	+03	+06	+08	+12	+12	+12	+04	4.1
ACC-LVL 3	25	-20	-20	-19	-17	-13	-06	-03	-01	-01	-01	-01	-08	5.8	-07	-07	-03	-02	+01	+02	+05	+07	+10	+16	+16	+03	4.5
I42602 - NO2																											
PRECISION	26	-58	-58	-53	-49	-29	-14	-08	-05	-02	-01	-01	-20	16.4	+05	+05	+06	+07	+09	+13	+34	+42	+47	+60	+60	+20	15.7
ACC-LVL 1	30	-32	-32	-16	-14	-07	-04	-02	-00	+01	+01	+01	-06	6.7	-01	-01	-00	+01	+03	+05	+08	+13	+13	+14	+14	+06	4.0
ACC-LVL 2	30	-35	-35	-18	-07	-06	-02	-01	+01	+01	+01	+01	-04	7.3	-00	-00	-00	+01	+03	+04	+05	+10	+11	+16	+16	+04	3.3
ACC-LVL 3	30	-34	-34	-12	-07	-04	-02	-00	-00	+01	+06	+06	-03	6.7	-00	-00	-00	-00	+01	+04	+05	+07	+08	+08	+08	+03	2.4

(Continued)

TABLE 8. CUMULATIVE FREQUENCY DISTRIBUTIONS OF QUARTERLY PROBABILITY LIMITS FOR ALL REPORTING ORGANIZATIONS (1984)

AUTOMATED ANALYZERS

POLLUTANT LEVEL	NUMBER OF REP.ORG.-QTR	LOWER PROBABILITY LIMIT													UPPER PROBABILITY LIMIT												
		MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	STD DEV	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	STD DEV
C42101 - CO																											
PRECISION	386	-42	-29	-18	-14	-10	-07	-04	-02	-01	+02	+03	-08	5.7	-05	-03	-00	+02	+03	+06	+09	+12	+15	+25	+37	+07	5.1
ACC-LVL 1	301	-57	-41	-26	-20	-13	-07	-04	-01	+02	+06	+10	-09	9.2	-09	-07	-03	-02	+02	+07	+12	+18	+24	+41	+51	+08	9.3
ACC-LVL 2	300	-41	-26	-18	-14	-09	-05	-02	-01	+01	+03	+04	-06	5.9	-08	-06	-02	-00	+02	+05	+08	+13	+18	+23	+28	+06	5.7
ACC-LVL 3	298	-30	-25	-18	-15	-09	-05	-03	-01	-00	+03	+06	-06	5.6	-09	-07	-03	-01	+01	+04	+07	+11	+15	+29	+34	+05	5.7
ACC-LVL 4	8	-16	-16	-16	-16	-08	-03	-01	-01	-01	-01	-01	-05	5.3	-03	-03	-03	-03	+03	+07	+10	+11	+11	+11	+11	+05	4.8
C42401 - SO2																											
PRECISION	412	-42	-33	-24	-20	-15	-11	-08	-06	-05	-00	+07	-12	6.2	-04	-03	+01	+02	+05	+08	+11	+15	+19	+32	+51	+09	6.6
ACC-LVL 1	326	-49	-44	-30	-24	-18	-12	-07	-03	-00	+04	+13	-13	9.1	-11	-07	-03	-00	+03	+09	+13	+20	+26	+41	+87	+10	10.3
ACC-LVL 2	330	-46	-32	-26	-20	-14	-10	-06	-02	-00	+06	+13	-11	7.6	-08	-06	-01	+01	+04	+08	+12	+17	+24	+37	+53	+09	7.8
ACC-LVL 3	326	-48	-33	-22	-18	-14	-09	-05	-02	-00	+04	+09	-10	7.4	-07	-06	-03	-00	+04	+08	+12	+18	+22	+32	+50	+08	7.9
ACC-LVL 4	46	-29	-29	-20	-19	-12	-07	-05	-01	-00	+07	+07	-09	7.0	-02	-02	-00	-00	+03	+05	+09	+15	+16	+31	+31	+07	6.5
C42602 - NO2																											
PRECISION	264	-56	-47	-28	-20	-15	-10	-06	-04	-02	+03	+07	-12	8.9	-07	-03	+02	+03	+07	+10	+15	+21	+25	+39	+54	+12	8.2
ACC-LVL 1	175	-99	-84	-45	-34	-21	-11	-05	-00	+05	+09	+10	-15	16.7	-12	-10	-02	+01	+05	+11	+18	+26	+42	+79	+99	+14	14.6
ACC-LVL 2	174	-72	-45	-24	-20	-14	-08	-05	-01	+01	+05	+10	-10	9.0	-09	-06	-01	+01	+04	+08	+12	+16	+21	+36	+76	+09	8.4
ACC-LVL 3	175	-51	-49	-23	-21	-13	-07	-03	-00	+02	+05	+14	-09	9.1	-10	-07	-03	-01	+02	+05	+09	+16	+19	+27	+60	+07	7.7
ACC-LVL 4	12	-61	-61	-61	-29	-11	-07	-03	-03	+03	+03	+03	-13	17.0	-07	-07	-07	-02	-00	+06	+14	+17	+62	+62	+62	+09	17.9
C44201 - O3																											
PRECISION	416	-37	-27	-19	-16	-13	-09	-06	-04	-02	-01	+03	-10	5.4	-09	-01	+02	+03	+05	+08	+11	+15	+19	+28	+35	+08	5.5
ACC-LVL 1	337	-65	-38	-26	-21	-16	-10	-05	-02	-00	+06	+18	-11	8.8	-09	-07	-02	+01	+03	+08	+13	+20	+27	+35	+55	+10	8.9
ACC-LVL 2	338	-99	-28	-20	-17	-12	-08	-04	-01	-00	+02	+06	-09	7.8	-07	-05	-02	-00	+03	+07	+10	+15	+18	+26	+62	+07	6.9
ACC-LVL 3	334	-59	-26	-19	-17	-11	-07	-04	-01	-00	+03	+08	-08	6.6	-11	-07	-03	-00	+03	+05	+09	+13	+16	+21	+44	+06	6.0
ACC-LVL 4	31	-21	-21	-18	-08	-07	-05	-01	-00	-00	+01	+01	-05	4.8	-00	-00	+01	+01	+02	+04	+06	+08	+13	+13	+13	+04	3.3
C42601 - NO																											
PRECISION	3	-15	-15	-15	-15	-15	-11	-08	-08	-08	-08	-08	-11	3.5	+07	+07	+07	+07	+07	+07	+08	+08	+08	+08	+08	+07	0.6
ACC-LVL 1	3	-09	-09	-09	-09	-09	-07	-06	-06	-06	-06	-06	-07	1.5	-06	-06	-06	-06	-06	-02	-00	-00	-00	-00	-00	-03	3.1
ACC-LVL 2	3	-06	-06	-06	-06	-06	-04	-03	-03	-03	-03	-03	-04	1.5	-03	-03	-03	-03	-03	+08	+08	+08	+08	+08	+08	+04	6.4
ACC-LVL 3	3	-03	-03	-03	-03	-03	+02	+05	+05	+05	+05	+05	+01	4.0	-00	-00	-00	-00	-00	+11	+11	+11	+11	+11	+11	+07	6.4

SECTION 3

REGIONAL RESULTS

REGIONAL DATA REPORTING

All reporting organizations having SLAMS/NAMS sites for the criteria pollutants are required to report P and A data. The numbers of such reporting organizations are listed in Table 9. Note that only five reporting organizations use the manual SO_2 method at SLAMS sites and only two use the manual NO_2 method.

TABLE 9. TOTAL NUMBER OF REPORTING ORGANIZATIONS REQUIRED TO REPORT FOR THE YEAR 1984, BY POLLUTANT

	Automated methods				Manual methods			
Region	CO C42101	SO_2 C42401	NO_2 C42602	O_3 044201	TSP I11101	Pb I12128	SO_2 I42401	NO_2 I41602
I	6	6	4	6	6	5	0	0
II	3	4	2	3	4	3	0	0
III	10	12	12	12	16	9	0	0
IV	21	23	13	26	32	11	2	1
V	20	25	13	24	30	15	0	0
VI	10	11	10	10	14	11	1	1
VII	11	9	6	11	12	10	0	0
VIII	4	4	3	3	9	3	0	0
IX	11	8	7	10	12	8	2	0
X	4	3	2	2	4	4	0	0
Nation	100	105	72	107	139	79	5	2

The breakdown of data completeness (defined as the percentage of reporting organizations which reported P&A data to EPA relative to the number required to report each quarter) is given in Table 10.

TABLE 10. PERCENTAGE OF REPORTING ORGANIZATIONS WITH COMPLETE DATA IN PARS FOR THE YEARS 1983 AND 1984

Region	Automated pollutants								Manual pollutants							
	CO C42101		SO_2 C42401		NO_2 C42602		O_3 044201		TSP I11101		Pb I12128		SO_2 I42401		NO_2 I41602	
	83	84	83	84	83	84	83	84	83	84	83	84	83	84	83	84
I	85	91	92	98	56	80	79	79	98	100	95	99	--	--	--	--
II	92	88	66	83	100	100	96	99	72	97	75	100	--	--	--	--
III	100	100	100	100	96	98	99	100	99	100	88	95	--	--	--	--
IV	83	84	79	87	51	63	81	79	97	99	78	80	--	--	100	--
V	78	85	77	92	65	79	76	88	99	97	89	85	94	100	75	100
VI	91	97	82	93	70	85	96	98	95	98	83	88	--	--	100	--
VII	78	78	69	77	68	75	80	73	97	95	66	83	--	0	63	100
VIII	68	98	100	98	92	92	96	100	96	100	75	83	--	--	0	--
IX	77	89	60	93	58	94	75	95	82	95	59	74	--	--	--	--
X	88	94	88	97	81	100	94	100	100	92	59	72	50	43	--	--
Nation	83	90	80	92	69	88	84	91	95	98	79	85	72	64	73	100

NOTE: -- Means no data was required, there being no SLAMS sites for these pollutants.

From 1983 to 1984, the percentages increased for most pollutants (except the manual SO_2) and for most region-pollutant combinations, except for

Region II, for CO
Region IV, for O_3
Region V, for TSP and Pb
Region VII, for O_3 and TSP
Region VIII, for SO_2
Region IX, for manual SO_2 and
Region X, for TSP.

A number of reporting organizations having SLAMS/NAMS sites for certain pollutants have reported no precision or accuracy data for 1984 for these pollutants:

Region	State	Reporting organization Number	Reporting organization Name	Pollutant
I	NH	30001	New Hampshire*	NO_2
II	VI	55001	Virgin Islands*	SO_2
	VI	55001	Virgin Islands*	TSP
V	IN	15001	State of Indiana*	NO_2
VI	OK	37102	Oklahoma City-County	SO_2
	OK	37102	Oklahoma City-County*	NO_2
	LA	19001	State of Louisiana*	Pb
VII	KS	17001	State of Kansas	NO_2
	IA	16001	Linn County*	Pb
	MO	26003	St. Louis City	Pb
IX	NV	29100	State of Nevada*	CO
	GU	54100	Guam*	SO_2
	NV	29100	State of Nevada*	O_3
	GU	54100	Guam*	TSP
	CA	05036	San Diego*	Pb
	NV	29300	Clark County*	Pb
	GU	54100	Guam*	SO_2 (manual)
X	AK	02020	Alaska	Pb

*Repeats from 1983.

Precision and accuracy reporting for 1984 was complete only for the following Region and pollutant combinations:

Region	Pollutant
I	TSP
II	Pb
II	NO_2
III	CO
III	SO_2
III	O_3
III	TSP
IV	SO_2 (manual
IV	NO_2 (manual)
VI	NO_2 (manual)
VIII	O_3
VIII	TSP
X	NO_2
X	O_3

Considering the reporting for all pollutants and all reporting organizations, the reporting organizations of Region III were most complete (99%). Region VII data was the least complete (80%). All regions showed improvement from 1983.

Region	Percentage of reports complete	
	83	84
I	84	91
II	84	95
III	97	99
IV	80	86
V	83	88
VI	74	82
VII	65	80
VIII	88	95
IX	66	83
X	85	93

When considering the various pollutant methods across all Regions, reporting was most complete for the NO_2 manual method and least complete for the manual SO_2 method.

Pollutant	Percentage of reports complete	
	83	84
TSP	95	98
O_3	84	91
CO	83	90
SO_2	80	92
Pb	79	85
NO_2 (manual)	73	100
SO_2 (manual)	72	64
NO_2	69	88

Reporting for all methods showed improvement from 1983, except the manual SO_2 method.

REGIONAL COMPARISONS

Figures 3 through 10 compare the precision and accuracy probability limits for 1981, 1982, 1983, and 1984. These comparisons are presented for each Region on a pollutant by pollutant basis.

CO

All regions indicate some improvement in precision and most show improvement in accuracy at all levels (Figure 3). Regions VII and VIII have more variability in accuracy that other regions.

SO_2

Most regions show improvement in precision (Figure 4). A negative bias persists in most regions in both precision and accuracy. Region VII has shown considerable improvement in precision and accuracy.

NO_2

Most regions show improvement in precision and accuracy (Figure 5). Exceptions for precision are Regions VIII and X. Region VII shows greater variability in accuracy at levels 2 and 3 than for previous years. The small negative bias in both precision and accuracy persists, similar to SO_2.

O_3

The precisions for most regions except IV and VIII improved over the four-year period. (Figure 6). Region II limits have increased from 1982. Some improvement is generally indicated for most regions for accuracy at the three levels.

TSP

The charts (Figure 7) show consistently and appreciably more variability in precision than accuracy. This results because the precision checks involve the total measurement process whereas the accuracy audit applies only to the flow portion of the process. On the average, minor improvements in both precision and accuracy are evident.

Pb

Figure 8 shows considerable variability in both precision and accuracy from region to region and also from year to year within some regions. This may be partly explained by the fact that assessments for Pb were not officially required until 1983, after which the results appear more uniform across regions. The noticeable negative bias which existed for accuracy audit results for most regions in 1981 and 1982 seems to have been corrected.

SO_2 (Manual)

The limits (Figure 9) are considerably wider for precision than for accuracy, except for Region VI which has very tight limits for precision. This large difference screams for an explanation. (Note the difference in the scales of the precision and accuracy charts.) Wider limits for precision are expected since the results from collocated samplers involve the entire measurement process, whereas the accuracy audits involve only the chemical analytical portion. However, this does not explain the excellent precision results from Region VI. Negative biases in accuracy results are persistent from year to year for Regions IV and IX, but not for other regions.

NO_2 (Manual)

The results (Figure 10) are similar to other manual methods in that the precision limits are considerably wider than for accuracy. Region VII reported no precision data for 1981, 1982, and 1984.

General

Taking into account the minor trends of improvement, the general consistency from year to year of the differences of results among pollutants and among levels of the same pollutants on a national basis, and among regions for given pollutants, is truly surprising. These appreciable differences which persist from year to year strongly indicate that whatever forces or causal factors are in action in each region and in each pollutant measurement system are persistent over the years. These significant differences between regions should be investigated to identify the major causal factors, since some regions consistently produce more precise and accurate data than other regions.

Further, each region should evaluate the differences among the states and reporting organizations in a similar graphical manner as shown by Figures 3 through 10. Then investigations should be conducted to determine why some states or reporting organizations produce better precision and accuracy than others. Appropriate corrective actions should then be taken to improve the precision and accuracy of the reporting organizations having the worst results.

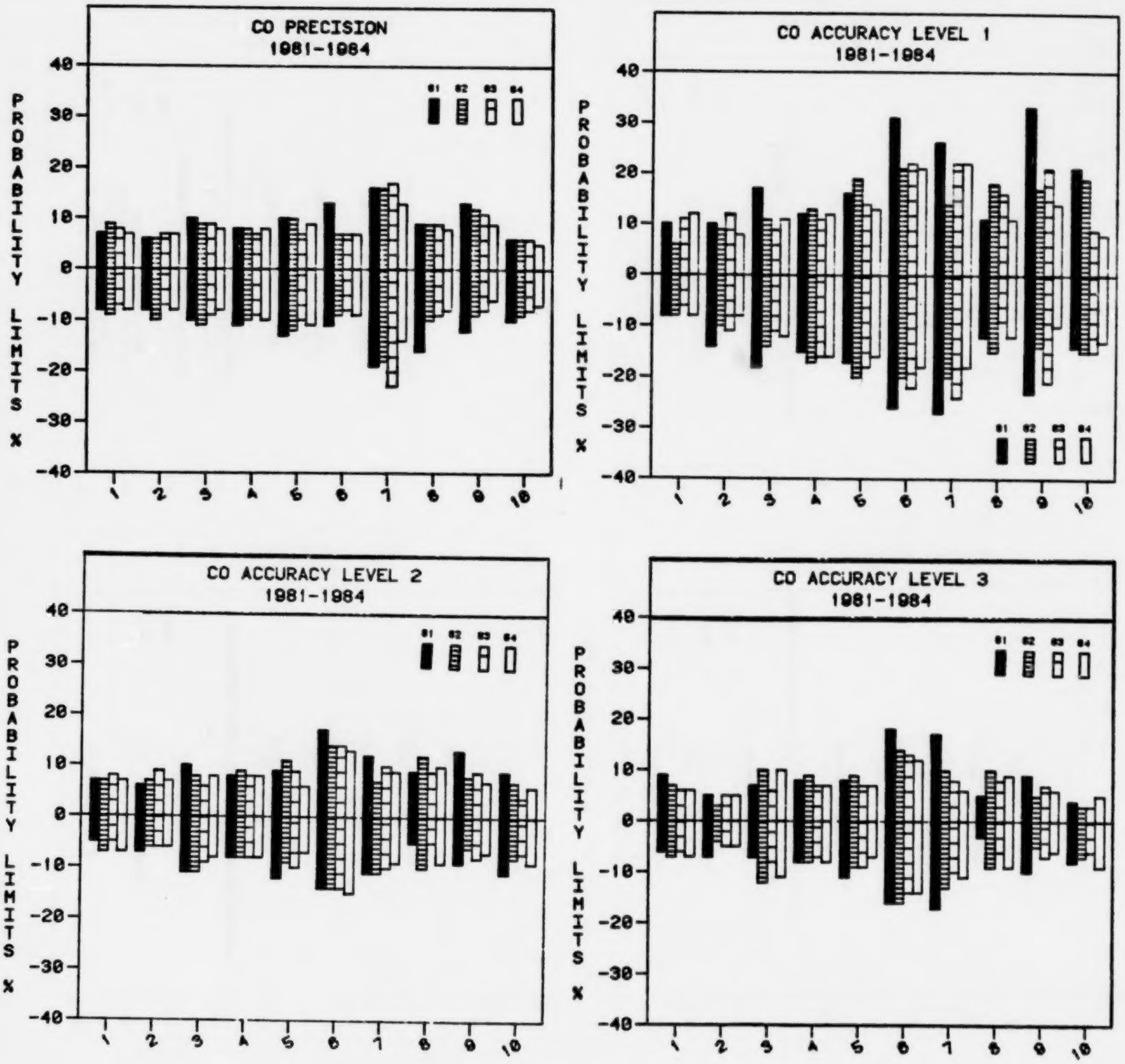


Figure 3. CO precision and accuracy by region for 1981 through 1984.

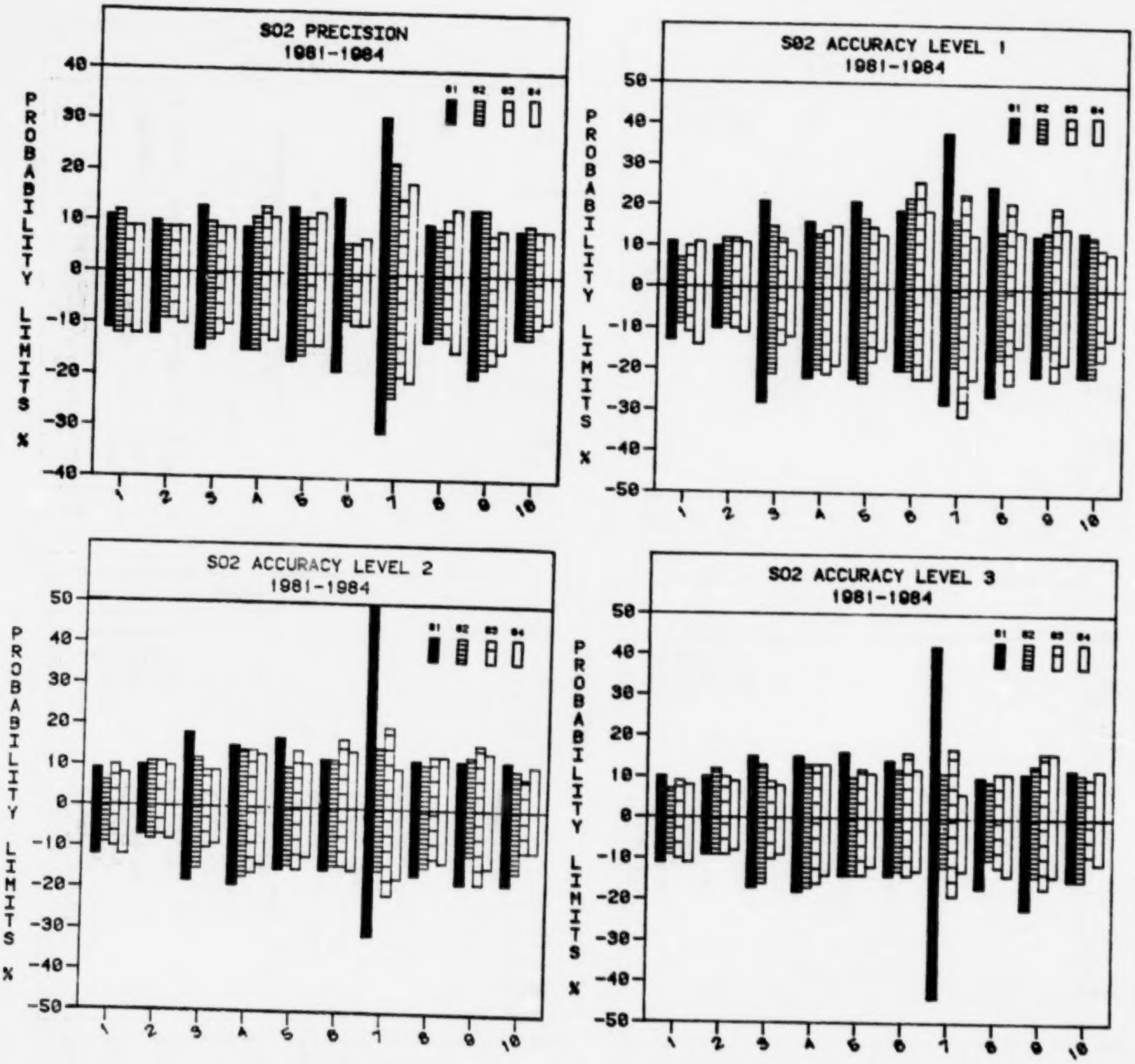
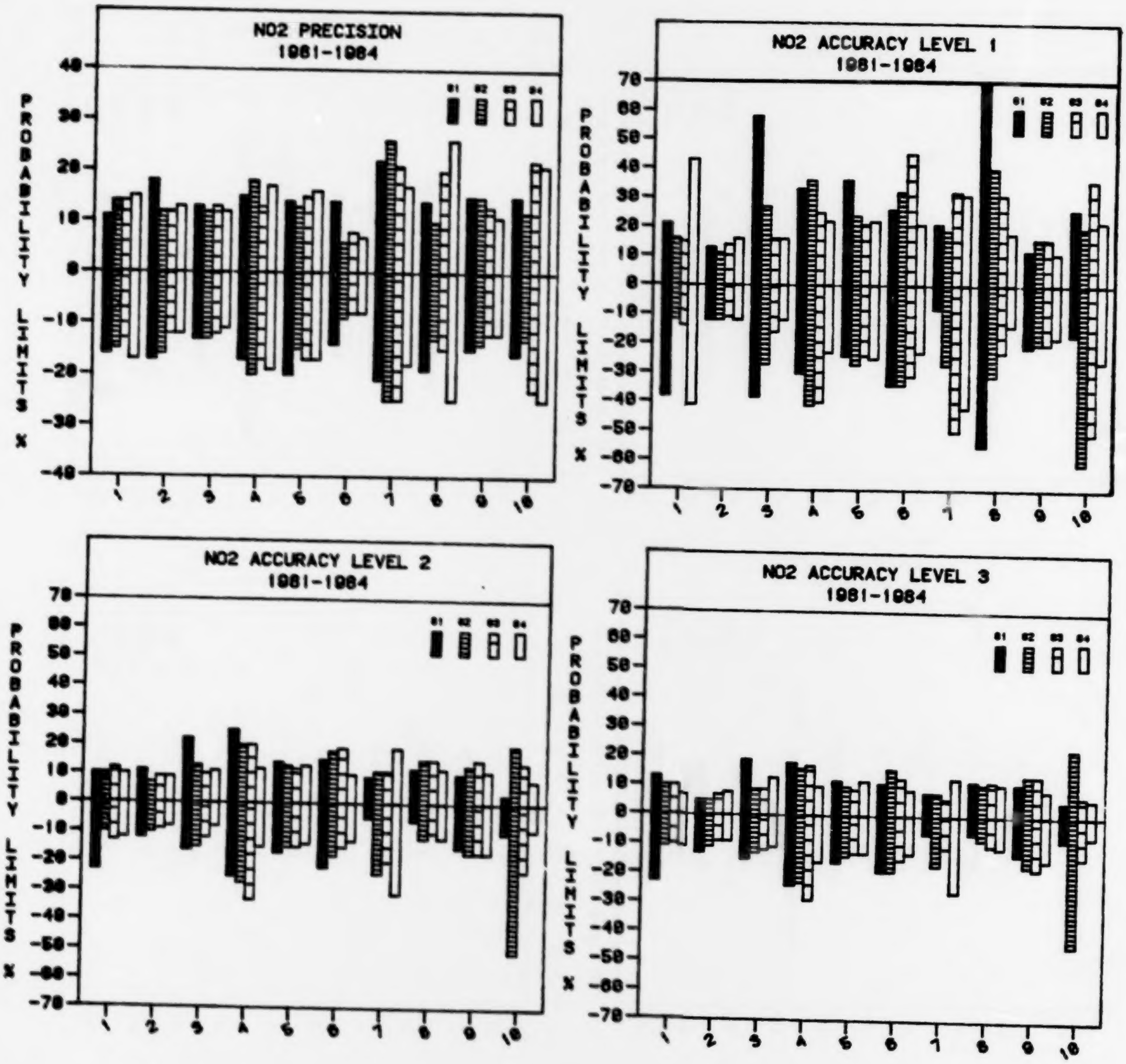


Figure 4. Continuous SO_2 precision and accuracy by region for 1981 through 1984.



NO2 PRECISION
1981-1984

NO2 ACCURACY LEVEL 1
1981-1984

NO2 ACCURACY LEVEL 2
1981-1984

NO2 ACCURACY LEVEL 3
1981-1984

Figure 5. Continuous NO_2 precision and accuracy by region for 1981 through 1984.

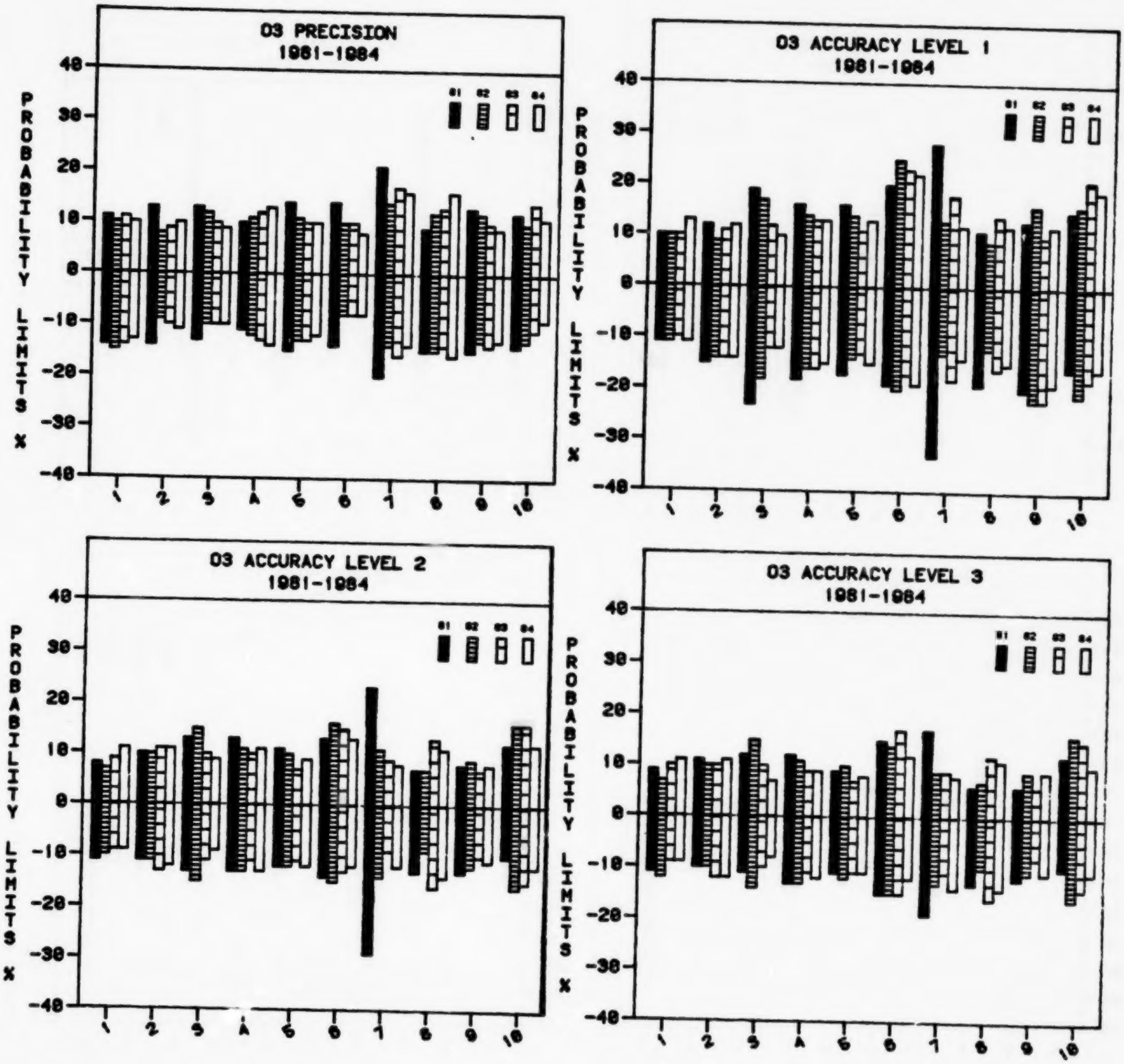


Figure 6. Ozone precision and accuracy by region for 1981 through 1984.

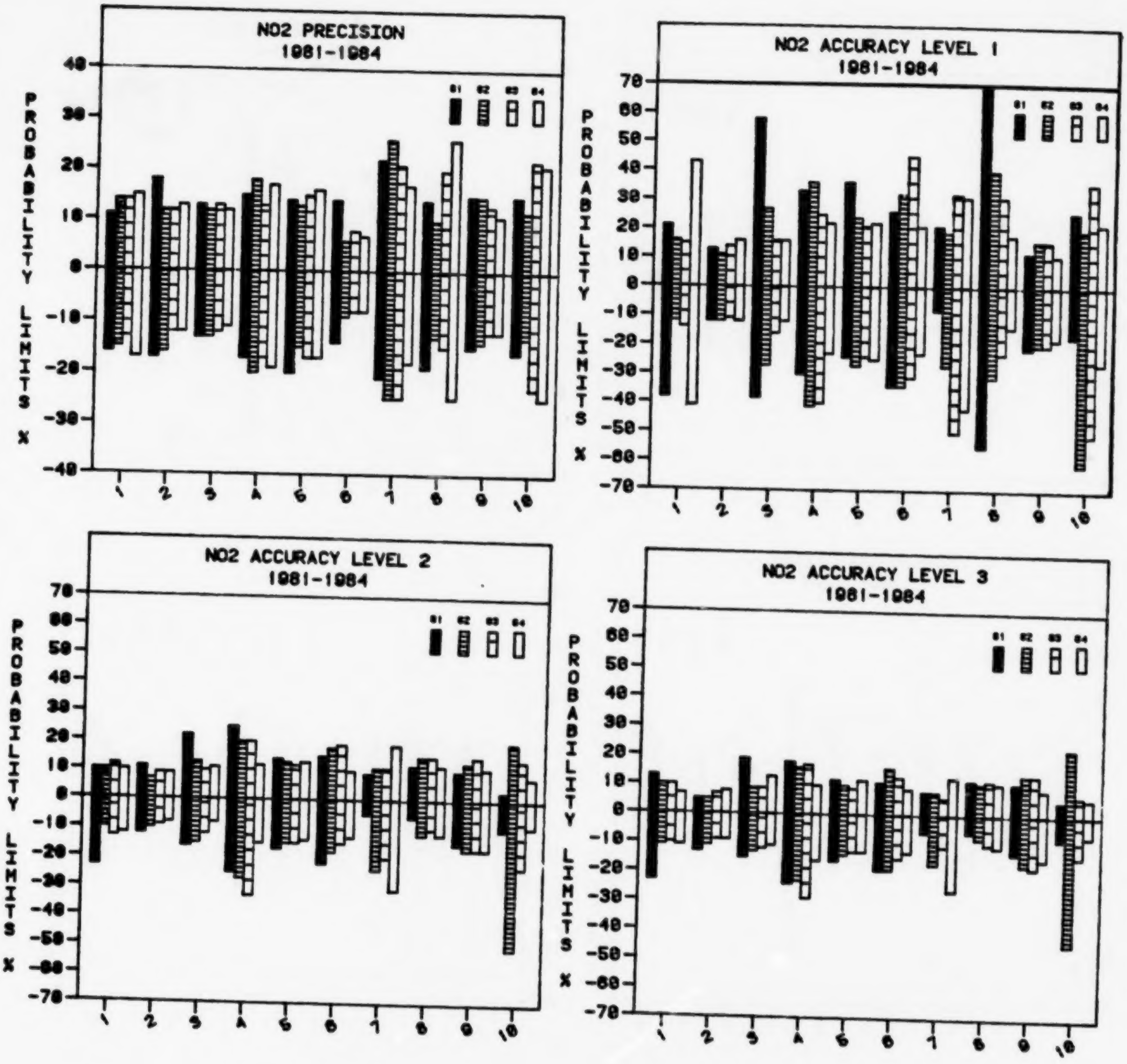


Figure 5. Continuous NO_2 precision and accuracy by region for 1981 through 1984.

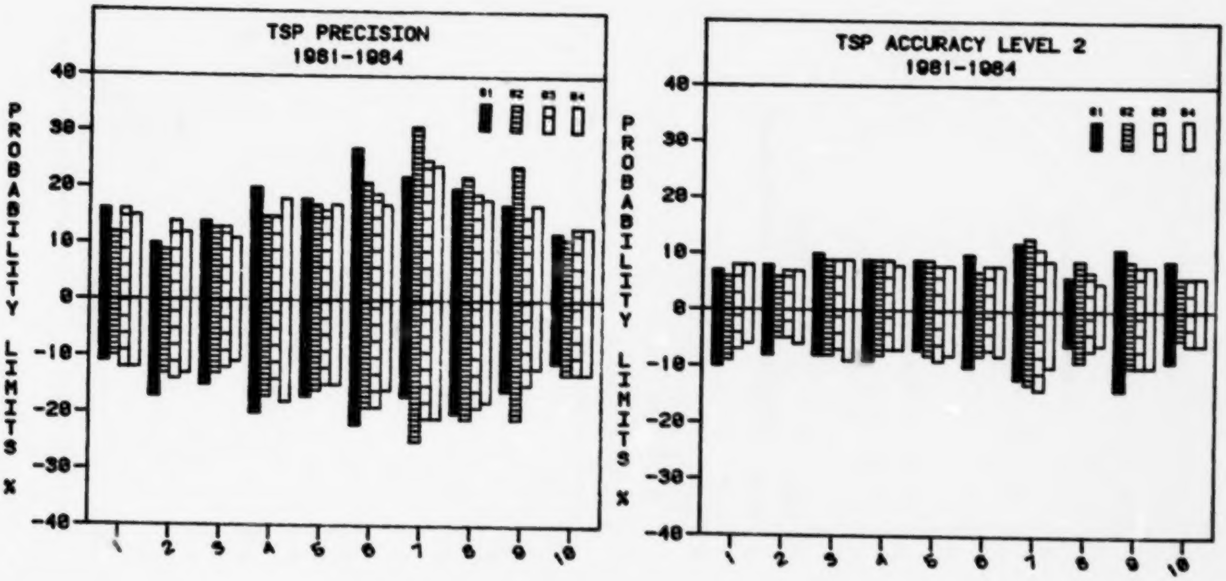


Figure 7. TSP precision and accuracy by region for 1981 through 1984.

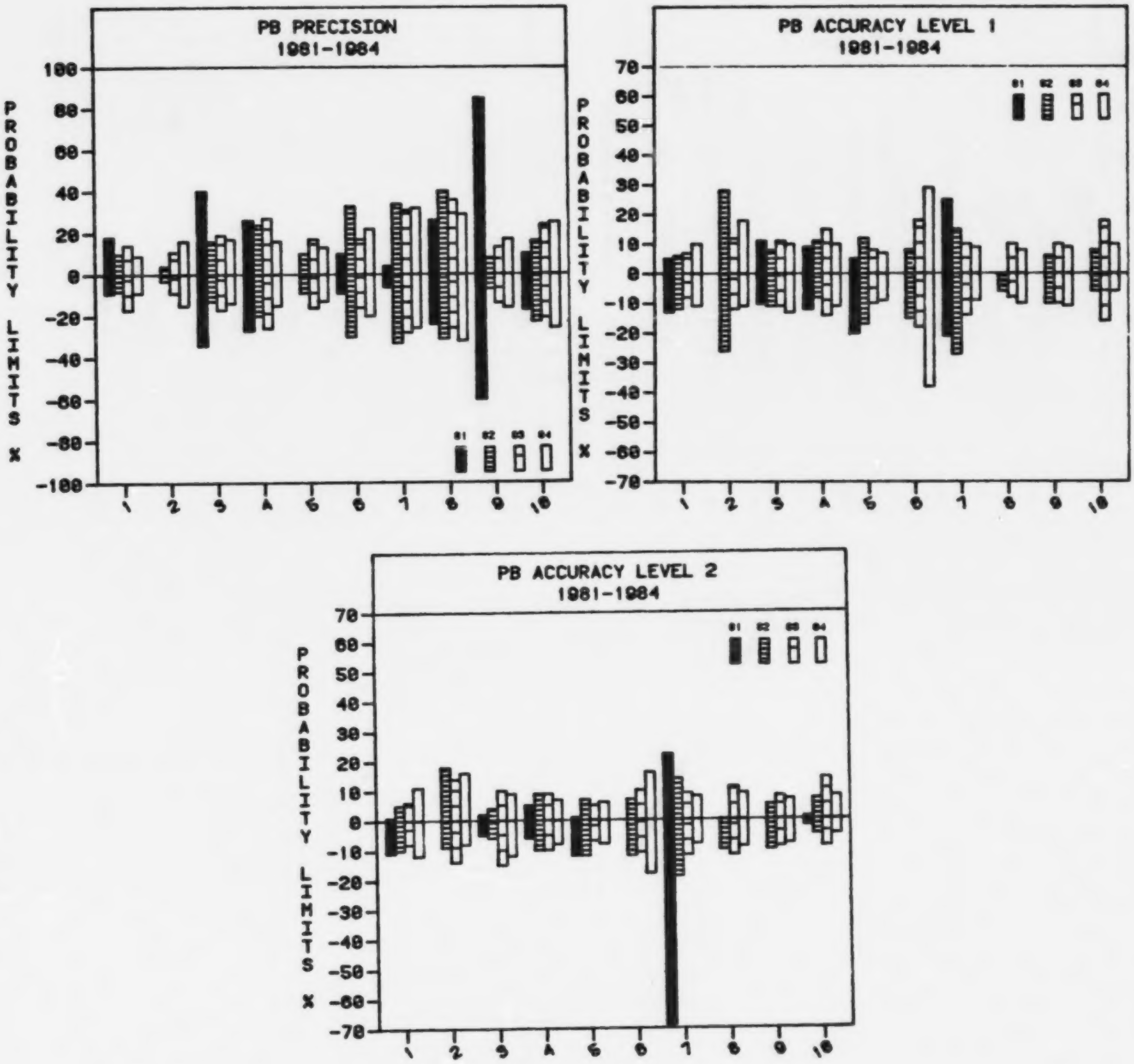


Figure 8. Lead precision and accuracy by region for 1981 through 1984.

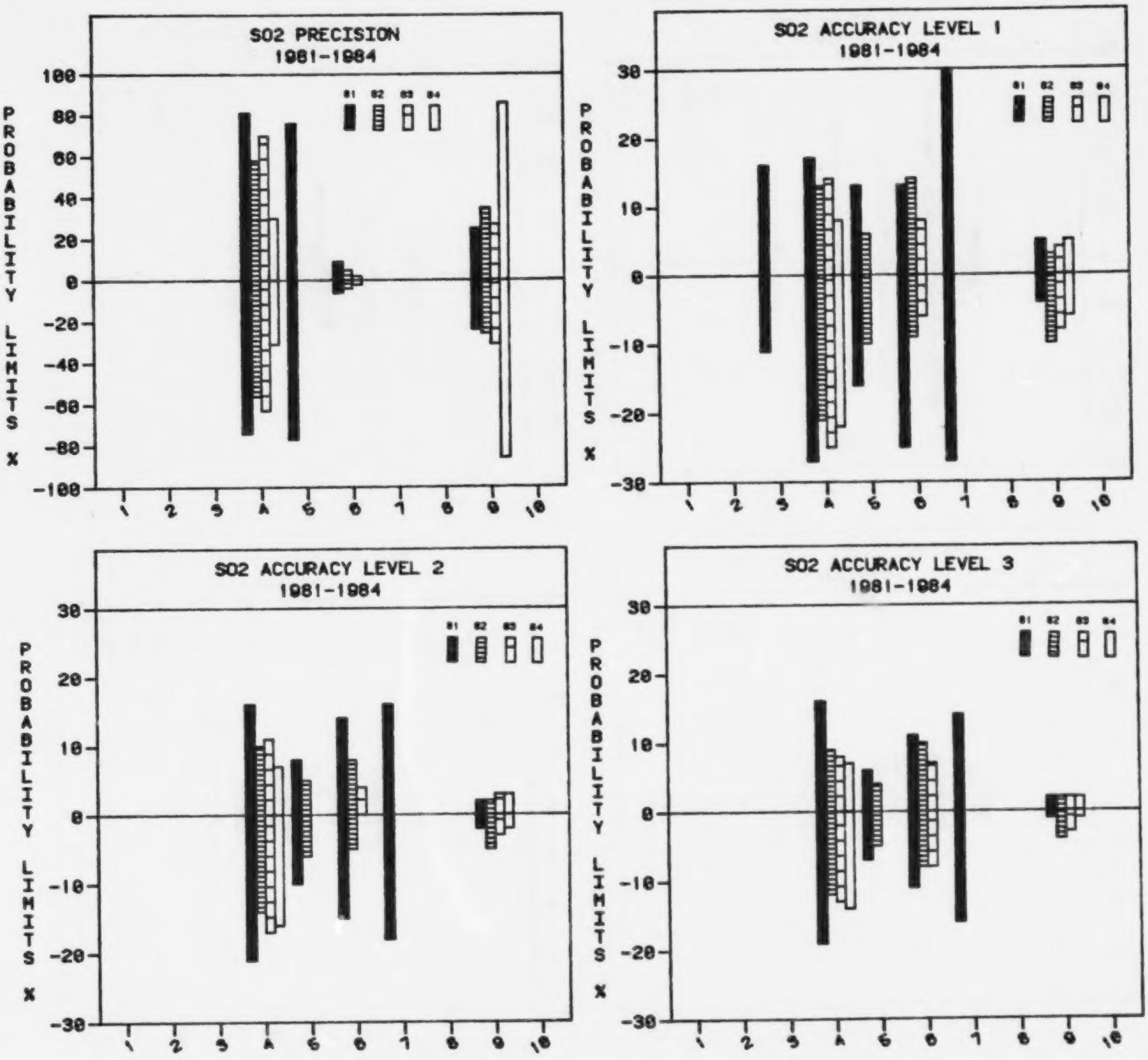


Figure 9. Manual SO_2 precision and accuracy by region for 1981 through 1984.

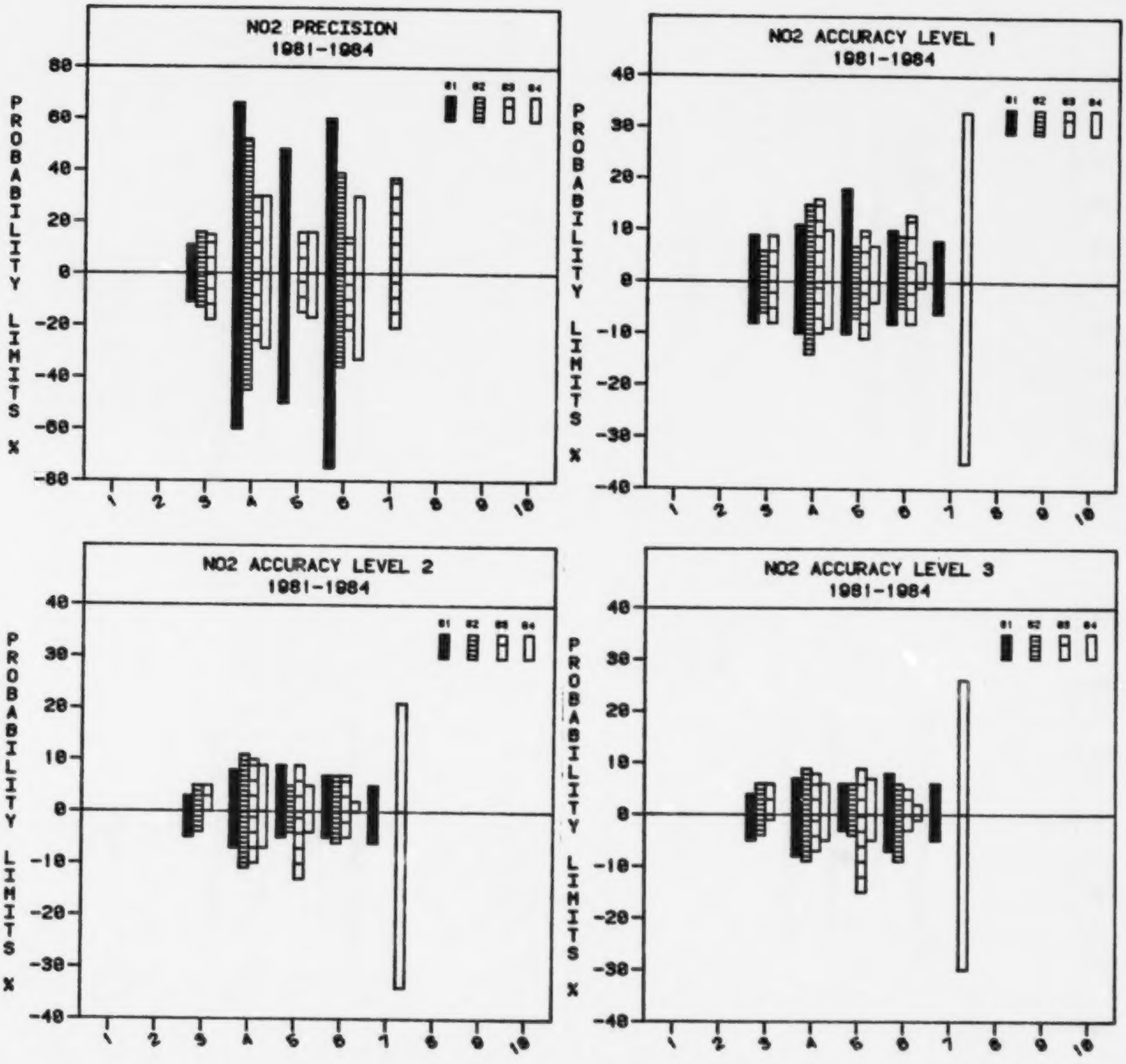


Figure 10. Manual NO_2 precision and accuracy by region for 1981 through 1984.

SECTION 4

RESULTS BY REPORTING ORGANIZATIONS

Table 11 shows the total number of Reporting Organizations reporting data to EMSL in 1984. By comparing the numbers between Tables 9 and 11, one can see the extra effort exerted by some of the State and local agencies to provide quality assurance information in cases where they have no SLAMS or NAMS sites. There are an additional 2 reporting organizations for CO, 7 for continuous SO_2, 7 for continuous NO_2, 8 for ozone, 7 for TSP, 7 for Pb, 4 for manual SO_2 and 6 for manual NO_2. Apparently, these additional sites are special purpose monitoring sites or additional local sites not in the SLAMS/NAMS network.

TABLE 11. NUMBER OF REPORTING ORGANIZATIONS HAVING DATA IN THE PARS MASTER FILE FOR THE YEAR 1984

	Automated pollutants				Manual pollutants			
Region	CO C42101	SO_2 C42401	NO_2 C42602	O_3 044201	TSP I11101	Pb I12128	SO_2 I42401	NO_2 I41602
I	6	6	4	6	6	5	0	0
II	3	4	2	3	4	3	0	0
III	10	12	12	12	16	9	0	0
IV	22	29	17	32	37	16	6	4
V	20	26	15	25	30	16	0	2
VI	10	11	10	10	14	11	1	1
VII	11	9	6	11	14	10	0	1
VIII	5	4	3	3	9	3	0	0
IX	11	8	8	11	12	9	2	0
X	4	3	2	2	4	4	0	0
Nation	102	112	79	115	146	86	9	8

Appendix D shows the annual combined upper and lower probability limits for each reporting organization. Each reporting organization can compare their values with those of other reporting organizations and with the regional and national values. Also given for each reporting organization are the following informational items:

Continuous methods	Manual methods
No. of SLAMS and NAMS sites	No. of SLAMS and NAMS sites
No. of analyzers	No. of samplers
No. of precision checks	No. of collocated sites
No. of accuracy audits	No. of accuracy audits

Any user of monitoring data from some specific site and time period should obtain, from the local air monitoring agency, the precision and accuracy data for the specific sites and time periods involved.

SECTION 5

FURTHER EVALUATION OF PARS DATA

Some interesting comparisons can be made by considering the corresponding national averages of Tables 6 and 7 and the 50-percentile values of the probability limits of Table 8. Table 12 compares these limits by considering the spread, or range, of the limits.

TABLE 12. COMPARISON OF THE 50-PERCENTILE FREQUENCY DISTRIBUTION VALUES WITH THE NATIONAL LIMIT VALUES FOR 1984

		National values			50-percentile values		
		Lower limit	Upper limit	Range	Lower limit	Upper limit	Range
Manual methods							
TSP	Precision	-16	17	33	- 9	10	19
	Accuracy*	- 8	8	16	- 6	5	11
Pb	Precision	-18	20	38	-10	10	20
	Accuracy	-11	10	21	- 5	5	10
NO_2	Precision	-27	27	56	-14	13	27
	Accuracy	- 7	8	15	- 2	4	6
SO_2	Precision	-33	31	64	-20	24	44
	Accuracy	-14	7	21	- 8	3	11
Continuous methods							
CO	Precision	- 9	8	17	- 7	6	13
	Accuracy	- 9	8	17	- 5	5	10
O_3	Precision	-12	10	22	- 9	8	17
	Accuracy	-12	10	22	- 8	7	15
NO_2	Precision	-14	13	27	-10	10	20
	Accuracy	-13	12	25	- 8	8	16
SO_2	Precision	-12	11	23	-11	8	19
	Accuracy	-12	11	23	-10	8	18

*All accuracy values for all pollutants are for Level 2.

MANUAL METHODS

For the manual methods, in all cases the spreads (ranges) of the probability limits are considerably greater for precision than for accuracy. These differences are consistent for both the National averages and the 50-percentile values. These same relationships also existed for 1981, 1982 and 1983. This means that the short-term within-sampler variability (precision) is larger than the variability of accuracy which includes variations between, or among, samplers as well as imprecision within samplers. This may seem contradictory at first, but giving consideration to exactly how the results are obtained and what the results represent will provide a rational explanation.

TSP. In the case of TSP, the precision results are obtained from collocated sampler data. They include variability from the sample collection process, the analytical filter weighing process, the filter handling and conditioning process, and also the flow rate measurement process; whereas the accuracy audit is a check only on the flow rate measurement. Further, the collocated sampler results are obtained at all ambient concentrations above 1 $\mu g/m^3$, the detection limit for the method. At low concentration levels the relative variability is greater than at higher concentrations. The combined effects of these two causes explain the wider limits for precision.

Manual SO_2 and NO_2. Similar to the TSP data, the precision results are obtained from collocated sampler data. They include variability from the flow measurement, absorbing solutions, sampling, sample handling, and storage effects (stability) of the samples as well as the laboratory analytical portion of the method; whereas the accuracy audit is a check only on the laboratory analytical portion of the method. Further, the collocated sampler results are obtained at all ambient concentrations above the detection limits of the methods. Many of these concentrations are below the concentrations of the accuracy audits. At lower concentrations, the relative variability is greater than at higher concentrations.

As noted from Table 12, these differences are considerable, indicating that only a small portion of the variability results from the laboratory analytical part of the method. A very considerable amount of variability of the method is attributed to other portions of the measurement process. The very wide limits of uncertainty attributed only to the imprecision of these methods strongly emphasizes that the manual methods should be replaced by the continuous anlayzers. Alternatively, if any reliance is to be placed on individual daily data from the manual methods, all of the various portions of the measurement processes must be much more closely controlled, if possible.

Pb. The precision estimates for Pb are obtained from the analysis of duplicate strips from the same hi-vol filter. Consequently, actual variability of Pb content across the length of the filter, filter handling (with possible loss of particulate), variation in cutting filter strips, and the

SECTION 5

FURTHER EVALUATION OF PARS DATA

Some interesting comparisons can be made by considering the corresponding national averages of Tables 6 and 7 and the 50-percentile values of the probability limits of Table 8. Table 12 compares these limits by considering the spread, or range, of the limits.

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		National values			50-percentile values		
		Lower limit	Upper limit	Range	Lower limit	Upper limit	Range
Manual methods							
TSP	Precision	-16	17	33	- 9	10	19
	Accuracy*	- 8	8	16	- 6	5	11
Pb	Precision	-18	20	38	-10	10	20
	Accuracy	-11	10	21	- 5	5	10
NO_2	Precision	-27	27	56	-14	13	27
	Accuracy	- 7	8	15	- 2	4	6
SO_2	Precision	-33	31	64	-20	24	44
	Accuracy	-14	7	21	- 8	3	11
Continuous methods							
CO	Precision	- 9	8	17	- 7	6	13
	Accuracy	- 9	8	17	- 5	5	10
O_3	Precision	-12	10	22	- 9	8	17
	Accuracy	-12	10	22	- 8	7	15
NO_2	Precision	-14	13	27	-10	10	20
	Accuracy	-13	12	25	- 8	8	16
SO_2	Precision	-12	11	23	-11	8	19
	Accuracy	-12	11	23	-10	8	18

*All accuracy values for all pollutants are for Level 2.

extraction of real-world particulate are involved in addition to the chemical analytical portion of the method. The accuracy audit data are obtained from the chemical analysis of strips to which known amounts of water-soluble Pb salts have been added and thus do not involve the other portions of the measurement process, nor do they involve real-world particulates.

Further, similar to the other manual methods (TSP, NO_2, and SO_2), the precision estimates are obtained at all concentrations above the detection limit. Many of these concentrations are less than those of the accuracy audits. At lower concentrations, the relative variability is expected to be greater than at higher concentrations.

Manual Methods (General). To make valid comparisons of the precision and accuracy data, such comparisons should be made at the same concentration levels. Only then will it be possible to determine whether the larger variabilities of the precision estimates are due to differences in concentration level or to the larger scope of the measurement system involved.

Such comparison studies can be accomplished when the raw concentration data are obtained from the State and local agencies for each precision and accuracy check as specified by the proposed regulation revisions to Appendix A of 40 CFR, Part 58 promulgated March 19, 1986. Now only the reporting organizations could perform such studies, since only they have the raw data available.

The estimation of the magnitude of the contributions of the various sources of variability to the total measurement processes could be systematically studied in specially designed experiments.

CO, SO_2, NO_2, O_3 (Continuous Methods). The national values for precision for the continuous methods are almost exactly the same as the accuracy values at level 2. For these continuous measurement methods, the precision assessments reflect the within-instrument variability obtained from bi-weekly checks at relatively low concentrations, namely

8 - 10 ppm for CO
and .08 -.10 ppm for SO_2, NO_2, and O_3.

In comparison, the accuracy audits include between-instrument variability as well as imprecision, but are conducted at higher concentrations for level 2.

15 - 20 ppm for CO
.15 -.20 ppm for SO_2, NO_2, and O_3.

Thus, the added between-instrument variability for the level 2 accuracy audit is almost exactly offset by the improved percentage within-instrument variability for the precision.

Level 1 accuracy audits are conducted at concentrations of

.03 -.08 for CO
3 - 8 for SO_2, NO_2, and O_3.

At Level 1, concentrations less than those for the precision checks, the probability limits for accuracy are wider than for precision.

COMPARISON OF NATIONAL LIMIT VALUES AND 50-PERCENTILE VALUES

With reference again to Table 12, in all cases the spreads (ranges) of the National values for both precision and accuracy are greater than for the corresponding 50-Percentile values. The most logical explanation is that the National values are unduly influenced by extreme values. If the distributions of the upper probability limits and the lower probability limits were near normal, as they should be, the 50-Percentile values should closely agree with the National values.

An evaluation of the shape of the distributions does in fact show that the distributions are not normal due to an excessive number of extreme values (i.e., values in the tails of the distribution).

All of the distributions of the upper and lower probability limits are generally symmetric about zero. The only exception is for the SO_2 continuous method, for both precision and accuracy. For precision checks, the distribution of the lower probability limits is biased from 5 to 7 percent on the negative. A similar observation was made for 1981, 1982, and 1983 data. This means that, on the average, the precision checks resulted in values about 5 percent less than the assumed concentrations. No cause has been identified for this trend. One possible explanation is that the relatively low concentrations of SO_2 (0.08 0.10 ppm) in cylinders specially prepared for precision checks may degrade after preparation. For accuracy audits, the negative bias is from 3 to 5 percent. This means that on the average, the results of the accuracy audits were from 3 to 5 percent less than the assessed concentrations of the audit gases. Again, it may be possible that this bias represents a degradation of the SO_2 audit gases. These biases for SO_2 were observed previously in the 1981, 1982, and 1983 data and seem to be consistent in magnitude and direction. Another possible explanation of the negative biases for precision and accuracy for SO_2 is that the instruments, on the average, tend to drift in a negative direction as previously discussed on page 13. No satisfactory explanation can be provided at this time. However, this consistent bias should be investigated and corrected, if possible.

A review of Table 8 clearly shows the large variability of precision data for the manual methods and, in particular, the presence of many extreme values for the SO_2 and NO_2 methods. Table 8 and Figure 2 show more variability of the accuracy audit results from the continuous SO_2 and NO_2 methods than for CO and O_3.

Based on the frequency distributions of Table 8, quarterly probability limit values which exceed those listed in Table 13 should be considered excessive or outlier values and should initiate immediate investigation to determine and, hopefully, correct the cause of such excessive values. The values given in Table 13 are slightly tighter in some cases than the corresponding values given in the report for the 1983 data.

TABLE 13. VALUES OF QUARTERLY PROBABILITY LIMITS CONSIDERED AS EXCESSIVE BASED ON 1984 DATA

	Precision limits	Accuracy limits		
		Level 1	Level 2	Level 3
Manual methods				
TSP	± 26	---	± 15	---
Pb	± 35	± 20	± 16	---
NO_2	± 50	± 15	± 12	± 10
SO_2	± 70	± 21	± 18	± 15
Continuous methods				
CO	± 16	± 25	± 18	± 15
O_3	± 19	± 27	± 19	± 18
NO_2	± 27	± 44	± 23	± 21
SO_2	± 22	± 28	± 25	± 22

SECTION 6

COMPARISON OF RESULTS FROM THE PARS AND THE PA AUDIT PROGRAM

A general comparison between the accuracy data of the PARS program and the Performance Audit (PA) data is included in this report. The Performance Audit data are the results of an independent check conducted by the Quality Assurance Division (QAD) of the EMSL under the National Performance Audit Program (NPAP).

In the NPAP, specially prepared audit samples or devices are sent from QAD to the participating ambient air monitoring agencies. The samples or devices are carefully and accurately assessed by EMSL utilizing NBS Standard Reference Materials (SRM's) or standards. The monitoring agencies analyze or measure the samples or devices as unknowns or blinds and report their results to QAD for evaluation. Audit programs are conducted for the following pollutant measurements, using the materials indicated:

Measurement	Audit materials	Portion of measurement system audited
SO_2 (manual)	Freeze-dried sodium sulfite	Chemical analytical
NO_2 (manual)	Aqueous sodium nitrite	Chemical analytical
Pb	Filter strip with lead nitrate	Chemical analytical
TSP	Reference flow device	Flow
CO	Cylinders containing CO gas	Continuous instrument
SO_2	Cylinder containing SO_2 gas	Continuous instrument

The audit materials or devices are prepared at three to six different concentrations or flow levels. Separate reports on the evaluation of the PA data are published by EMSL.[5,6,7] Also, other reports[8] have dealth with the use of PARS data.

As indicated above, the NPAP does not yet include an audit for the ozone or continuous NO_2 methods. Therefore, no comparisons of the NPAP or PA data with the PARS data are possible for those pollutants.

Since precision assessments are not made in the PA program, only accuracy can be compared across the PARS and the PA programs. For the purpose of this report, the results from PARS and the PA system are compared at approximately the same levels by matching laboratories and reporting organizations. Since the PARS data are presented with outliers, the same approach was taken with the audit data. Knowledge of the past audit data reports, however, indicates that the presence of outliers may make a significant difference in the audit results for some agencies.

Comparisons of the national values of the probability limits (Table 14) exhibit fairly good agreement between the results of the two programs. However, there is considerable variation between the results of the two programs when comparisons are made on Regional and reporting organization bases. Lack of better agreement results from several factors. First, the inclusion of outlier values in the PA data appears to have introduced some excessive distortion of general trends. Second, even though the PARS values in Table 14 are weighted by the number of audits, variations due to many sources of error for both data sets are averaged together to obtain the national values, thereby masking any correlations which may have existed for the results of individual agencies. Third, the concentration levels for the two systems do not coincide exactly at each of the audit levels. Fourth, the PA data are the results of independent external audits, while the PARS accuracy data are based on the results of independent internal audits. The expected effects of the last-mentioned factor would cause the spread of the limits for the PA to be wider than that for the PARS. Examination of the results (see Table 14) confirm these expectations. The PA data for 1984 are generally better than the coresponding data for 1983.

TABLE 14. SUMMARY COMPARISON OF EMSL PERFORMANCE AUDITS (PA) vs. PARS ACCURACY AUDIT DATA FOR YEAR 1984

		National values 95% probability limits (%)							
		Level 1		Level 2		Level 3		Level 4	
Pollutant	Audits	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
CO									
PA	771	- 9	12	-20	21	- 7	8		
PARS	974	-14	13	- 8	8	- 8	7	-10	8
SO_2									
PA	357	-23	19	-16	14	-17	14	-22	20
PARS	819	-13	11	-12	11	-12	10	-11	9
TSP									
PA	2447			-15	18				
PARS	6559			- 6	7				
Pb									
PA	723	-35	30	-17	11	-22	14		
PARS	1259	-17	15	-11	10				
SO_2 (manual)									
PA	30			-15	6	-18	15	-14	16
PARS	190	-18	8	-12	6	-12	6		
NO_2 (manual)									
PA	30	- 5	- 1	- 7	- 2	- 3	4	- 7	- 3
PARS	139	- 6	8	- 6	7	- 4	5		

Comparisons of the 95 percent probability limits for the PA and the PARS results by Region are shown in Figures 11a through f for selected concentration levels. The figures show considerable variation among Regions.

CO.

Note than on Figure 11a, the probability limits for PA for Region I are shown with and without the extreme results of the State of Vermont.

The width of the PARS probability limits for level 3 exceed those for PA for seven of the ten Regions. The PARS limits are considerably wider for Regions III and VI than for other Regions. For previous years, the PA limits have generally been wider than the PARS limits. The PARS limits for most Regions, for some reason, are generally wider for 1984 than for 1983.

TSP.

For all Regions, the width of the probability limits for PARS is less than for PA. This may be explained by the fact that within each reporting organization the flow rate checks are not as completely independent from their internal standards as are the PA audits. Regions III and IX have more variability than other Regions.

NO_2 (manual).

The variabilities for both PA and PARS are relatively small for the limited amount of usage of the method.

SO_2 (manual).

For PA results there is a definite negative bias for both Regions IV and IX. This bias also exists for PARS for Region IV. A possible explanation is that for PA the samples are prepared at EMSL/RTP and some degradation of the samples occurs prior to analysis in the SLAMS laboratories. For PARS the standards are normally prepared locally and analyzed soon after preparation. Region IV should check to determine the cause of the negative bias for the PARS results.

Pb.

There is considerable variation in the results from Region to Region. However, for most Regions, the PARS variability is considerably less than for PA. This may be explained by the fact that the local independently-prepared standards for PARS have close traceability to the materials used for calibration, whereas the standards for PA, since they are prepared at EMSL/RTP, are more completely independent. There appears to be no significant bias in either the PA or the PARS results.

Region VI results have, for both PA and PARS, much more variability than for other regions.

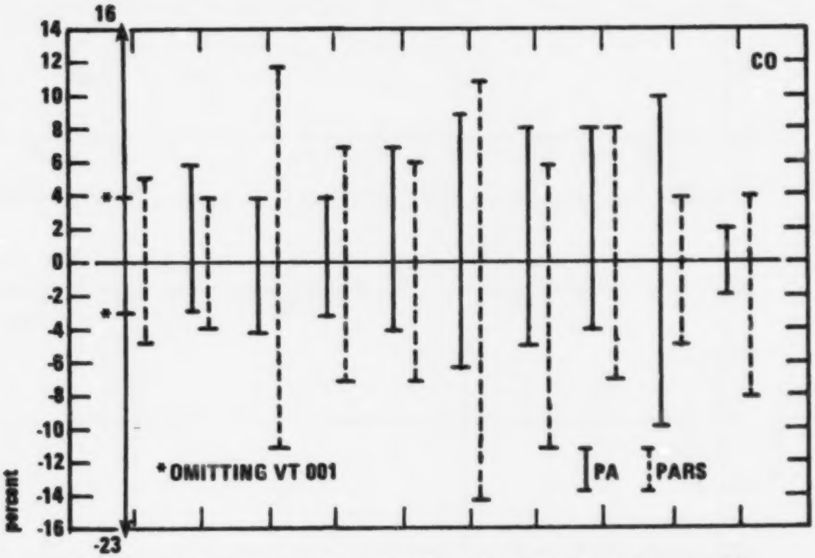

Figure 11a. Comparison of PA and PARS for CO (level 3).

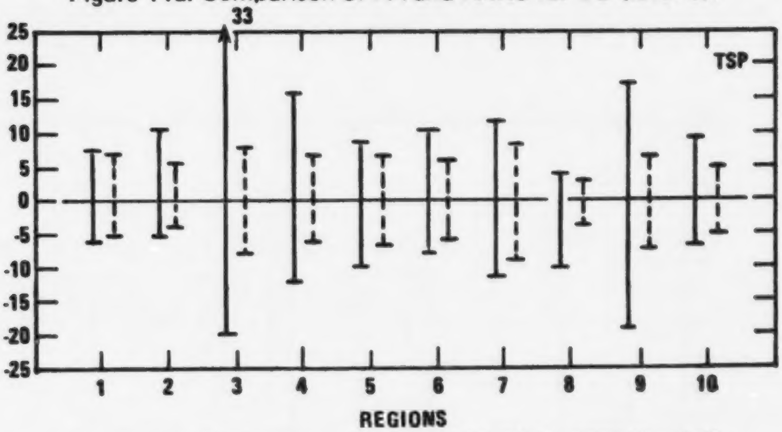

Figure 11b. Comparison of PA and PARS for TSP (level 2).

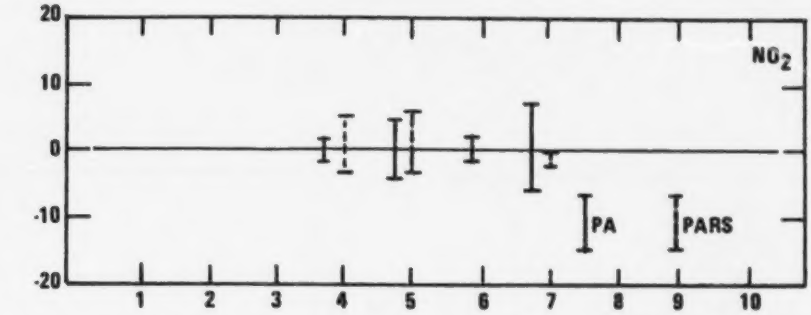

Figure 11c. Comparison of PA and PARS for manual NO_2(level 3).

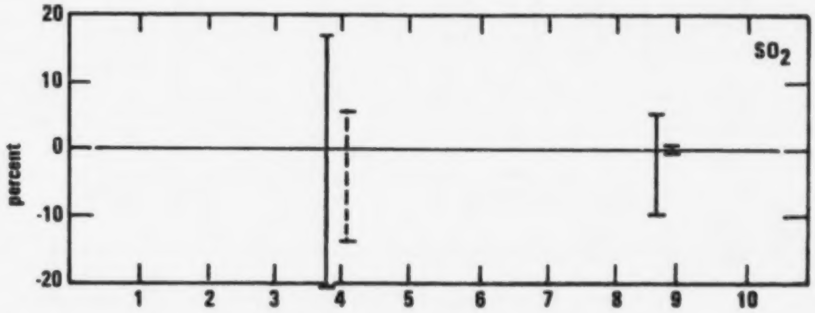

Figure 11d. Comparison of PA and PARS for manual SO_2(level 3).

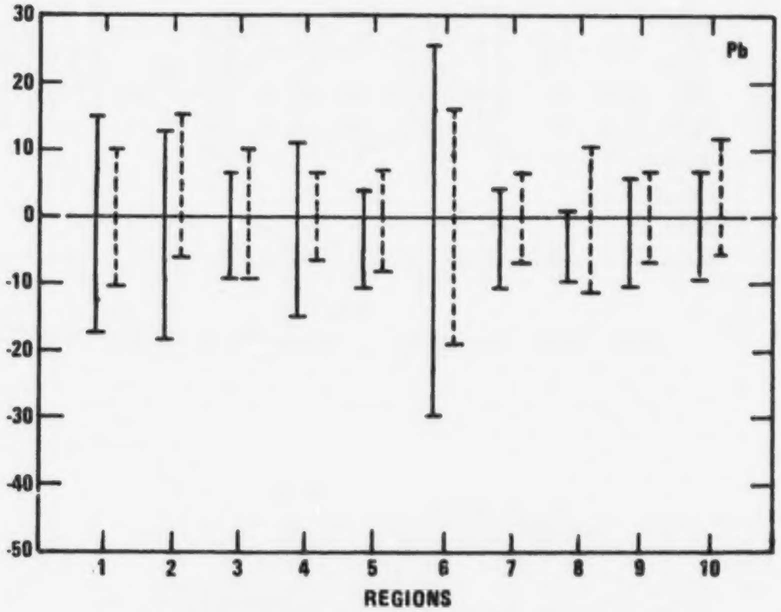

Figure 11e. Comparison of PA and PARS for Pb (level 2).

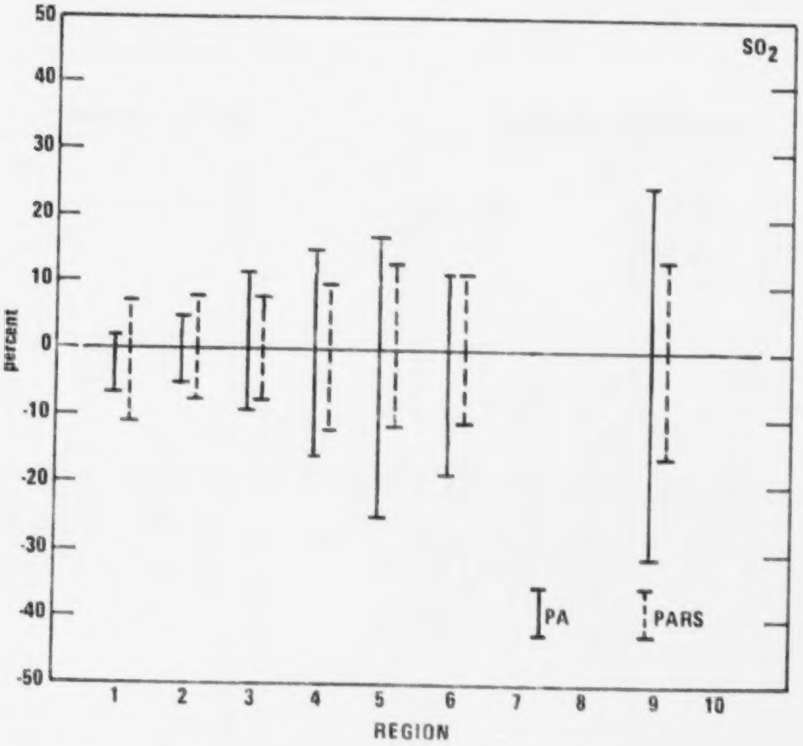

Figure 11f. Comparison of PA and PARS for continuous SO_2 (level 3).

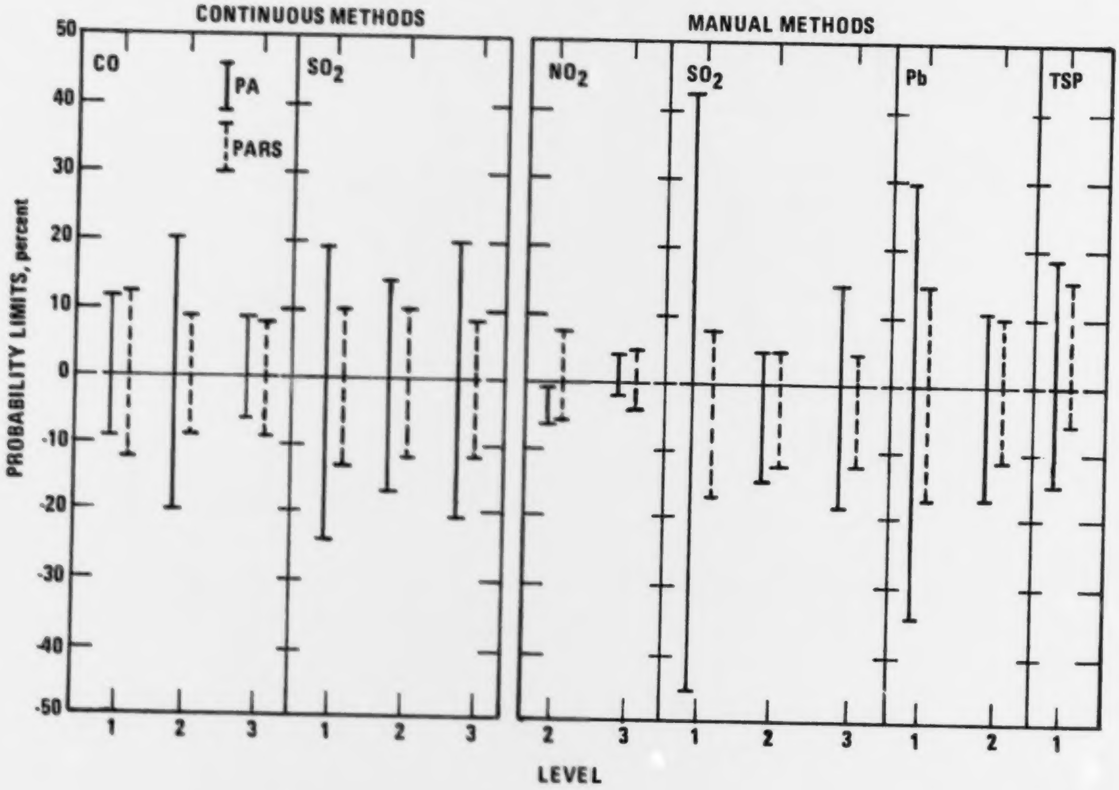

Figure 12. Comparison of PA and PARS, national values, 1984.

SO_2 (Continuous).

Figure 11f shows the available comparisons of the PA and PARS data for the continuous SO_2 method. For unknown reasons, the computer program would not report the comparisons for Regions VII, VIII, and X even though there is data from these three Regions.

Regions V and IX show considerably more variation of PA results than other Regions. All Regions, except II and III, show a slight negative bias for both PA and PARS data, similar to the negative biases for the manual SO_2 method. This same condition existed for the 1983 data.

Comparison of PA and PARS on a National Basis.

The comparisons of the PA and PARS results for all levels on a national basis are shown on Figure 12. These results are consistent across levels for each pollutant except for CO, where the level 2 probability limits for PA are much wider than the PARS.

Missing PA and PARS Comparisons.

Comparsion of the results from PARS and PA are, of course, possible only when the data are available from both systems for paired reporting organization-laboratory combinations. Paired data were not available for 106 comparisons. Of these, data was not available because of missing data from the PARS for 19 comparisons:

Region	State	Reporting organization	Pollutant
I	ME	20001	CO
II	VI	55001	SO_2, TSP*
IV	AL	01012	SO_2
	AL	01013	CO,* Pb*
	AL	01015	SO_2
	FL	10018	SO_2
VI	LA	19001	Pb*
	NM	32001	SO_2 (manual)
VII	IA	16001	Pb
	MO	26003	Pb*
IX	CA	05036	Pb*
	NV	29100	CO*
	NV	29300	Pb
	GU	54100	SO_2, TSP*, SO_2 (manual)
X	AK	02020	Pb*

*Also missing for 1983

Lack of laboratory participation in the National Performance Audit Program is the reason there is no paired data available for 89 cases. In these cases, the laboratories (reporting organization) did not comply with the requirements of the federal regulations. In some of these cases, the laboratory requested the audit samples but did not report any results. A listing of missing PA audit data follows:

Region	State	Reporting organization	Laboratory	Pollutant
II	PR	40001	309001	Pb*
	VI	55001	310001	SO_2
III	DC	09001	312100	Pb*
	MD	21003	312001	SO_2
	WV	50002	314002	CO*
IV	AL	01011	319001	TSP
	AL	01012	419001	SO_2
	AL	01013	419003	SO_2, CO, TSP* Pb
	AL	01015	419005	SO_2
	FL	10001	323005	CO
	FL	10003	323004	CO
	FL	10004	323008	SO_2
	FL	10012	423004	CO
	FL	10013	423016	TSP
	FL	10016	423008	CO
	FL	10017	423001	CO
	FL	10018	423002	SO_2, CO, TSP
	GA	11010	321001	CO
	MS	25100	322002	SO_2
	NC	34002	418003	SO_2, CO
	SC	42001	320001	CO
	TN	44002	417004	SO_2
	TN	44003	417003	SO_2, CO
	TN	44004	417002	CO
	KY	18002	416001	CO
V	IN	15010	429011	TSP*
	IN	15001	329001	SO_2
	IN	15005	429005	SO_2
	IN	15008	429004	Pb
	IN	15009	429008	TSP
	IN	15100	329002	CO, Pb, TSP
	IL	14003	428003	SO_2
	MI	23002	426001	TSP*
	OH	36006	427001	Pb*
	OH	36008	427003	Pb*
	OH	36009	427004	Pb*
	OH	36010	427005	Pb*
	OH	36014	427008	CO

(continued)

Region	State	Reporting organization	Laboratory	Pollutant
VI	LA	19001	334001	Pb*
	NM	32002	430001	Pb,* CO, SO_2 (manual)
	OK	37101	331001	TSP
	OK	37102	431001	CO,* SO_2*
	OK	37103	431002	TSP*
VI	TX	45001	333001	Pb*
	TX	45004	433004	TSP*
	TX	45006	433008	TSP*
VII	MO	26004	438002	TSP*
	IA	16001	436001	Pb
	KS	17001	437003	SO_2, TSP
	NE	28002	435001	CO
	NE	28003	435003	SO_2
VIII	CO	06001	344001	Pb,* TSP*
	MT	27001	339002	SO_2
	MT	27002	439001	TSP*, CO
	MT	27003	439002	TSP*
	MT	27004	439003	TSP*
	SD	43001	342001	TSP*
	WY	52001	343001	TSP*
IX	AZ	03200	447001	SO_2
	AZ	03300	447002	SO_2
	CA	05001	345002	SO_2
	CA	05036	445005	Pb, TSP
	CA	05061	445002	SO_2
	HI	12120	348001	CO*
	NV	29300	446002	TSP,* CO, Pb
	GU	54100	349001	TSP,* SO_2
X	ID	13001	554004	CO*
	ID	13001	354001	TSP*
	ID	13001	554003	Pb*
	ID	13001	354002	SO_2

In 13 cases, data were unavailable from both PARS and PA:

Region	State	Reporting Organization	Laboratory	Pollutant
II	VI	55001	310001	SO_2
IV	AL	01013	419003	Pb
	AL	01015	419005	SO_2
	FL	10018	423002	SO_2
VI	NM	32001	330001	SO_2 (manual)
	OK	37102	431001	SO_2

*Also missing for 1983.

Region	State	Reporting Organization	Laboratory	Pollutant
VII	MO	26003	438003	Pb*
	IA	16001	436001	Pb
IX	AZ	03200	447001	SO_2
	CA	05036	445005	Pb*
	NV	29300	446002	Pb
	GU	54100	349001	TSP,* SO_2

*Also missing for 1983.

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

The results of PARS data for 1984 indicate some general improvement over the data for previous years. However, considerable differences exist among Regions and individual reporting organizations for most measurement methods. Investigations should be made by the Regions and the states to determine the causes of these significant differences.

Comparison of PARS and PA data show more variability of the PA data than for PARS, except for CO. These differences are presumably due to the fact that the external PA accuracy audits are more completely independent than the internal PARS accuracy audits. These differences have been consistent for past years.

Further improvement in the data quality assessments, which are measures of the monitoring data quality, can be achieved only through continuing efforts of State and local agency personnel involved (first-hand) with the operation and quality control of their measurement systems. Regional QA Coordinators can also assist through their review of the operations and quality control practices across the States in their Regions.

Each Regional QA Coordinator should evaluate the PARS data from all the reporting organizations within his Region to identify those organizations having excessively large variations of probability limits. Investigation should be made to determine the causes and correct them to preclude future excessive deviations. Similarly, Regional QA Coordinators should review the operations of the reporting organizations having significantly better precision and accuracy results in order to identify specific procedures which should be uniformly used throughout the Region and the Nation to further improve the reliability of the monitoring data in the National Aerometric Data Base.

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APPENDIX A

GLOSSARY

State and Local Air Monitoring Stations (SLAMS) -- monitoring stations selected by the states and included in the State Implementation Plans. The stations and the plans are approved by the Regional Administrator. The purposes of the monitoring are to determine compliance to the National Ambient Air Quality Standards (NAAQS) and to determine background levels of the criteria pollutants.

National Air Monitoring Sites (NAMS) -- a subset of the SLAMS, selected by the states in collaboration with the Regional Offices and approved by the Administrator. The purpose of the sites is to monitor in the areas where pollution concentration and population exposure are expected to be highest in terms of the NAAQS. Although, in actuality the NAMS are a subset of SLAMS, the NAMS sites and the non-NAMS SLAMS sites are often referred to as two separate groups, the NAMS and SLAMS sites, respectively.

Reporting Organization — a state, or subordinate organization within the state, that is responsible for a set of SLAMS stations, monitoring for the same pollutant and for which PARS data can be logically pooled (statistically combined). It is important to emphasize that a reporting organization is pollutant- and site-specific and is responsible for the sampling, calibration, analysis, data quality assessment, and reporting of the monitoring data for the specific pollutant. It is possible that a particular SLAMS station may belong to two different reporting organizations, but the likelihood of this occurring is small.

Precision (Continuous Analyzers) -- a measure of repeatability obtained from repeated measurements of a standard concentration in a gas cylinder and the values indicated by the analyzer. For SO_2, NO_2, and O_3 analyzers, the gas concentration used for the precision check must be between 0.08 and 0.10 ppm and for CO it must be between 8 and 10 ppm. The data from all biweekly analyzer checks for a given pollutant are combined, and 95% probability limit values are reported to EPA each quarter by each reporting organization. For this report, the quarterly values for 1984 were combined, and overall 95% probability limits were calculated for each reporting organization, for each Region, and for the nation, as described in Appendix B.

Precision (Manual Methods) — a measure of repeatability for TSP, NO_2, and SO_2 manual methods (bubblers) determined by operating collocated samplers at selected sites. At each collocated site one sampler is designated as the "actual" sampler and the other as the "check" sampler, and the difference between the two samplers provides the precision estimate. For Pb, precision estimates are obtained by analyzing duplicate strips from a high volume filter sample collected at a site where high Pb concentrations exist. These precision checks are made from samples, usually taken every 6 days, and are reported quarterly. The data from the manual methods were calculated in a similar manner as the automated (continuous) analyzers.

Accuracy (Continuous Analyzers) — the agreement between an analyzer measurement and a known audit standard concentration. Accuracy estimates are obtained at least once per year for each analyzer by introducing blind audit standards into the analyzer. The audit samples must span at least three concentration levels and, whenever possible, must be traceable to NBS or other authoritative reference. At least 25% of the analyzers in each reporting organization must be audited each quarter. The percentage difference for each audit concentration is determined, and the average for all analyzers checked within that quarter is calculated for each level. The standard deviation for each level is then used to calculate the 95% probability limits for the reporting organization, which in turn are submitted quarterly to EPA. These quarterly values were combined to determine the annual values presented here. They were calculated in the same manner as described earlier for precision.

Accuracy (Manual Methods) -- the agreement between an observed or measured value and a known or reference value. For NO_2 and SO_2 manual methods, the accuracy of the analytical portion of the method is assessed at three levels by the analysis of known audit materials. For Pb, the accuracy of the analytical portion of the method is assessed at two levels. For TSP, the flow rate (or air volume) portion of the method is assessed at the nominal flow rate.

Completeness -- the number of the precision and accuracy checks reported as compared to the number that should have been reported if all checks had been done in accordance with the regulations. This value, expressed as a percentage, is not corrected for instances where equipment failure prevented conducting the check, or for periods when monitoring data were invalidated.

National Ambient Air Audit Program (NAAAP) — an external performance audit program conducted by EPA on state and local agency organizatons. Organizations operating SLAMS stations are required to participate in this program directed by the Environmental Monitoring Systems Laboratory (EMSL) of the EPA at Research Triangle Park, NC. In this program, blind audit materials prepared by EMSL are sent to participating laboratories. The laboratories analyze the samples and return the results to EMSL. Shortly after the audit is completed each participant receives a report that compares his performance to that of all other participants. The audit materials for the manual methods for SO_2, NO_2 and Pb are used to evaluate the accuracy of only the analytical laboratory portion of the method, and are as follows:

Method	Audit Materials
Manual SO_2	Freeze-dried Na_2SO_3
Manual NO_2	$NaNO_2$ solution
Pb	Filter strips spiked with Pb SO_4

The reference flow device used in the TSP sampler audit evaluates only the accuracy of the flow calibration. However, the CO and SO_2 continuous analyzer audits evaluate the entire measurement system. As explained above, the external NAAAP audits are conducted in essentially the same manner as the internal audits (accuracy checks) for the PARS program. The audits for the Pb method are conducted semi-annually and those for flow (TSP), and continuous CO and SO_2 monitors are conducted at least once per year.

APPENDIX B

FORMULAS FOR COMBINING PROBABILITY LIMITS

Section 5.2, Annual Reports, of Appendix A of 40 CFR Part 58 required that simple unweighted arithmetic averages of the probability limits for precision and accuracy from the four quarterly periods of the calendar year be reported with the annual SLAMS report. The simple unweighted arithmetic averages were specified to simplify the calculations for the states. Such limits would be essentially correct if only random variations occurred between quarters within a reporting organization and between reporting organizations within a state, i.e., if no statistically significant differences occurred between quarters within reporting organizations or between reporting organizations within states. However, experience has shown that significant differences do occur. Because of this fact, it is most correct to combine the data across quarters and across reporting organizations within states (and also across states within regions and across regions within the nation) in the manner described below. These formulas determine the yearly probability limits for the reporting organization which would have been computed from all the individual percent difference values, d_i, obtained during the year. To accomplish this, from each quarterly pair of probability limits, the average, $\overline{D}$, and standard deviation, S_a, are back-calculated:

$$\overline{D} = \frac{LL + UL}{2} \qquad (1)$$

$$S_a = \frac{UL - LL}{2(1.96)} \qquad (2)$$

where LL = lower probability limit
UL = upper probability limit

Except for the effect of the round-off of the reported probability limits to integer values, the above equations determine the original $\overline{D}$ and S_a values used by the reporting organizations to compute the originally reported limits.

Yearly average, $\overline{\overline{D}}$, and standard deivation, S, values are computed from the quarterly values as follows:

$$\bar{\bar{D}} = \frac{\sum n_i \bar{D}_i}{\sum n_i} \qquad (3)$$

where n_i = the number of individual percent difference, d_i, values for each quarter

$$\bar{S} = \sqrt{\frac{\sum (n_i - 1) S_i^2 + \sum n_i (\bar{D}_i - \bar{\bar{D}})^2}{(\sum n_i) - 1}} \qquad (4)$$

The appropriate yearly probability limits for the reporting organization are computed using the formulas:

$$UL = \bar{\bar{D}} + 1.96\ \bar{S} \qquad (5)$$

$$LL = \bar{\bar{D}} - 1.96\ \bar{S} \qquad (6)$$

NOTE: The same formulas are used for combining yearly reporting organization limits into state limits, state limits into region limits, and region limits into national limits.

Example: Suppose that the lower and upper 95% probability limits for CO for precision for the four quarters of a year are:

Quarter	Number of Precision Checks	Lower Probability Limit	Upper Probability Limit
1	10	-8	+6
2	9	-5	+9
3	13	-6	+4
4	7	-12	+11

For Quarter 1:

$$\bar{D} = \frac{LL + UL}{2} = \frac{-8+6}{2} = -1 \qquad \text{by equation (1)}$$

$$\bar{S} = \frac{UL - LL}{2(1.96)} = \frac{6-(-8)}{2(1.96)} = 3.6 \qquad \text{by equation (2)}$$

Similar computations for the other quarters, give values in the following table.

Quarter	n	$\bar{D}$	$\bar{S}$	$\bar{D} - \bar{\bar{D}}$
1	10	-1	3.6	-0.78
2	9	+2	3.6	2.22
3	13	-1	2.6	-0.78
4	7	-0.5	5.9	-0.28
	39			

Then

$$\bar{\bar{D}} = \frac{\sum n_i D_i}{\sum n_i} \qquad \text{by equation (3)}$$

$$= \frac{10(-1) + 9(2) + 13(-1) + 7(-0.5)}{39}$$

$$= \frac{-8.5}{39} = -0.22$$

$$\bar{S} = \sqrt{\frac{\sum (n_i - 1)\ S_i^2 + \sum n_i (D_i - D)^2}{(\sum n_i) - 1}} \qquad \text{by equation (4)}$$

$$= \sqrt{\frac{9(3.6)^2 + 8(3.6)^2 + 12(2.6)^2 + 6(5.9)^2 + 10(-0.78)^2 + 9(2.22)^2 + 13(-0.78)^2 + 7(-0.28)^2}{39 - 1}}$$

$$= \sqrt{\frac{510.30 + 58.90}{38}}$$

$$= \sqrt{14.98} = 3.87$$

The upper and lower 95% probability limits are then computed as:

$$UL = \bar{\bar{D}} + 1.96\ \bar{S} \qquad \text{by equation (5)}$$

$$= -0.22 + 1.96(3.87)$$

$= 7.37$ or 7 rounded off to nearest integer

$LL = \bar{\bar{D}} - 1.96\ \bar{S}$ by equation (6)

$= -0.22 - 1.96(3.87)$

$= -7.81$ or -8 rounded off to nearest integer

In this particular example, the results by the weighted combined formulas are very close to the simple unweighted arithmetic averages. However, in many cases the weighted combined formulas result in wider limits than the simple unweighted arithmetic averages and more correctly reflect the total variability exhibited by the individual percent differences.

APPENDIX C

LISTING OF REPORTING ORGANIZATIONS

	State		Reporting Organization	
Region	No.	Name	No.	Name
01	07	CONNECTICUT	001	AIR MONIT. SEC. DEPT. OF ENV. PROTECT.
01	20	MAINE	001	BUREAU OF A. Q. C. DEPT. OF ENV. PROTECT
01	22	MASSACHUSETTS	001	DIV. OF A. Q. C. DEPT. OF ENV. QUAL. ENG
01	30	NEW HAMPSHIRE	001	AIR RESOURCES AGENCY
01	41	RHODE ISLAND	001	DIV. OF A. HAZ. MAT. DEPT OF ENV. MANAGE.
01	47	VERMONT	001	AIR & SOLID WASTE PROGRAMS
02	31	NEW JERSEY	001	DEPT. OF ENV.PROT., DIV. OF ENV. QUAL.
02	33	NEW YORK	001	DEPT. OF ENV. CONSERV. DIV. OF AIR
02	40	PUERTO RICO	001	ENVIRONMENTAL QUALITY BOARD.
02	55	VIRGIN ISLANDS	001	DEPT. OF CONS. AND CULTURAL AFFAIRS
03	08	DELAWARE	001	STATE OF DELAWARE DNR & EC
03	09	DISTRICT OF COLUMBIA	001	WASHINGTON, DC DC & RA
03	21	MARYLAND	001	STATE OF MARYLAND
03	21	MARYLAND	002	ALLEGANY COUNTY
03	21	MARYLAND	003	ANNE ARUNDEL COUNTY
03	21	MARYLAND	005	BALTIMORE COUNTY
03	21	MARYLAND	006	PRINCE GEORGE'S COUNTY
03	39	PENNSYLVANIA	001	PENNSYLVANIA DER
03	39	PENNSYLVANIA	002	ALLEGHENY CO. BAPC
03	39	PENNSYLVANIA	003	PHILADELPHIA AMS
03	48	VIRGINIA	001	VIRGINIA STATE AIR POLL. CONTROL BOARD
03	48	VIRGINIA	002	CITY OF ALEXANDRIA
03	48	VIRGINIA	003	FAIRFAX COUNTY
03	48	VIRGINIA	005	ROANOKE COUNTY
03	50	WEST VIRGINIA	001	STATE OF WEST VIRGINIA
03	50	WEST VIRGINIA	002	WVA NORTHERN PANHANDLE REGIONAL OFFICE
03	01	ALABAMA	011	ALABAMA DEPT OF ENVIRONMENTAL MANAGEMENT
04	01	ALABAMA	012	AL, JEFFERSON CNTY BUREAU OF ENV. HEALTH
04	01	ALABAMA	013	ALABAMA DEPT. OF ENV. MANAGEMENT MOBILE
04	01	ALABAMA	014	AL, HUNTSVILLE AIR POLL. CONTROL DEPT.
04	01	ALABAMA	015	AL, TRICOUNTY DIV. OF AIR POLL. CONTROL
04	01	ALABAMA	016	TENNESSEE VALLEY AUTHORITY - ALABAMA
04	10	FLORIDA	001	FDER, NORTHWEST DISTRICT
04	10	FLORIDA	002	FDER, NORTHEAST DISTRICT
04	10	FLORIDA	003	FDER, ST. JOHNS RIVER DISTRICT
04	10	FLORIDA	004	FDER, SOUTHWEST DISTRICT
04	10	FLORIDA	005	FDER, SOUTH FLORIDA DISTRICT
04	10	FLORIDA	006	FDER, SOUTHEAST FLORIDA DISTRICT
04	10	FLORIDA	007	FDER, NORTHEAST DISTRICT BRANCH OFFICE
04	10	FLORIDA	011	FL, JACKSONVILLE BIO-ENV. SERVICES DIV.
04	10	FLORIDA	012	FL, HILLSBOROUGH CO., ENV. SERVICES DIV.
04	10	FLORIDA	013	FL, PINELLAS CO. DEPT OF ENV. MANAGEMENT

	State		Reporting Organization	
Region	No.	Name	No.	Name
04	10	FLORIDA	014	FL, MANATEE COUNTY HEALTH DEPARTMENT
04	10	FLORIDA	015	FL, SARASOTA CO. AIR POLL. CONTROL DIV.
04	10	FLORIDA	016	FL, PALM BEACH COUNTY HEALTH DEPARTMENT
04	10	FLORIDA	017	FL, BROWARD CO. ENV. QUAL. CONTROL BOARD
04	10	FLORIDA	018	FL, DADE CO. DEPT OF ENV. RESOURCES MGMT
04	11	GEORGIA	010	GEORGIA AIR QUAL. EVALUATION SECTION EPD
04	18	KENTUCKY	001	KENTUCKY DIV. OF AIR POLL. CONTROL
04	18	KENTUCKY	002	KY, JEFFERSON CO. AIR POLL. CONTROL DIST.
04	18	KENTUCKY	003	TENNESSEE VALLEY AUTHORITY - KENTUCKY
04	25	MISSISSIPPI	100	MISSISSIPPI BUREAU OF POLLUTION CONTROL
04	34	NORTH CAROLINA	001	NC NATURAL RESOURCES & COMMUNITY DEVEL.
04	34	NORTH CAROLINA	002	NC, FORSYTH COUNTY ENV. AFFAIRS DEPT.
04	34	NORTH CAROLINA	003	NC, MECKLENBURG CO. DEPT. OF ENV. HEALTH
04	34	NORTH CAROLINA	004	NC, WESTERN REGIONAL AIR POLL. CONTROL
04	42	SOUTH CAROLINA	001	SC DEPARTMENT OF HEALTH & ENV. CONTROL
04	44	TENNESSEE	001	TENNESSEE DIV. OF AIR POLL. CONTROL
04	44	TENNESSEE	002	TN, MEMPHIS-SHELBY CO. HEALTH DEPARTMENT
04	44	TENNESSEE	003	METRO HEALTH DEPT NASHVILLE-DAVIDSON CO.
04	44	TENNESSEE	004	TN, KNOX COUNTY DEPT. OF AIR POLL. CONTROL
04	44	TENNESSEE	005	TN, CHATTANOOGA-HAMILTON CO. AIR POLL. CONT.
04	44	TENNESSEE	006	TENNESSEE VALLEY AUTHORITY - TENNESSEE
05	14	ILLINOIS	001	DIV. OF AIR POLL. CONT., ILLINOIS EPA
05	14	ILLINOIS	002	CHICAGO DEPT. OF CONSUMER SERVICES
05	14	ILLINOIS	003	COOK COUNTY DEPT. OF ENVIRONMENTAL CONT.
05	15	INDIANA	001	AIR POLL. CONT. DIV. INDIANA STATE
05	15	INDIANA	002	DIV. OF AIR POLL. CONT., EVANSVILLE
05	15	INDIANA	003	ST. JOSEPH COUNTY
05	15	INDIANA	005	AIR POLL. CONT. DIV., VIGO COUNTY
05	15	INDIANA	008	INDIANAPOLIS APC DIVISION
05	15	INDIANA	009	ANDERSON LOCAL AGENCY
05	15	INDIANA	010	PORTER COUNTY HEALTH DEPARTMENT
05	15	INDIANA	100	LAKE COUNTY CONSOLDTD A Q MONIT WRK GRP
05	23	MICHIGAN	001	AIR QUAL. DIV., MI. DEPT. OF NAT. RES.
05	23	MICHIGAN	002	AIR POLL. CONT. DIV., WAYNE COUNTY
05	24	MINNESOTA	001	MINNESOTA POLL. CONT. AGENCY, AIR MO
05	36	OHIO	001	OHIO EPA, CENTRAL DIST. OFFICE
05	36	OHIO	002	OHIO EPA, NORTHEAST DIST. OFFICE
05	36	OHIO	003	OHIO EPA, NORTHWEST DIST. OFFICE
05	36	OHIO	004	OHIO EPA, SOUTHEAST DIST. OFFICE
05	36	OHIO	005	OHIO EPA, SOUTHWEST DIST. OFFICE
05	36	OHIO	006	AKRON AIR POLL. CONTROL
05	36	OHIO	007	AIR POLL. CONT. DIV., CANTON CITY
05	36	OHIO	008	SOUTHWESTERN OHIO AIR POLL. AGENCY
05	36	OHIO	009	CLEVELAND DIV. OF AIR POLL. AGENCY
05	36	OHIO	010	REGIONAL APC AGENCY, DAYTON
05	36	OHIO	012	AIR POLL. CONT. DIV. OF LAKE CNTY.
05	36	OHIO	013	AIR POLL. UNIT, PORTSMOUTH CITY
05	36	OHIO	014	NORTH OHIO VALLEY AIR AUTHORITY

	State		Reporting Organization	
Region	No.	Name	No.	Name
05	36	OHIO	015	TOLEDO POLL. CONTROL AGENCY
05	36	OHIO	016	MAHONING TRUMBULL AIR POLL. CONTROL
05	51	WISCONSIN	001	WI. DEPT. OF NAT. RES., AIR MONIT. UNIT
06	04	ARKANSAS	001	DEPT. OF POLL. CONT. & ECOLOGY CONT. MON
06	04	ARKANSAS	002	DEPT. OF POLL. CONT. & ECOLOGY
06	19	LOUISIANA	001	DEPT. OF NATURAL RESOURCES, NEW ORLEANS
06	32	NEW MEXICO	001	ENV. IMPROVEMENT DIV., SANTA FE
06	32	NEW MEXICO	002	CITY OF ALBUQUERQUE ENV. HEALTH DIV.
06	37	OKLAHOMA	101	OK STATE DEPT. OF HEALTH
06	37	OKLAHOMA	102	OKLAHOMA CITY-CNTY. HEALTH DEPT.
06	37	OKLAHOMA	103	TULSA CITY-CNTY. HEALTH DEPT.
06	45	TEXAS	001	TEXAS AIR CONTROL BOARD
06	45	TEXAS	002	DALLAS ENV. HEALTH & CONSERVATION DEPT.
06	45	TEXAS	003	EL PASO CITY-CNTY. HEALTH DEPT.
06	45	TEXAS	004	FT. WORTH PUBLIC HEALTH DEPT.
06	45	TEXAS	005	GALVESTON COUNTY HEALTH DISTRICT
06	45	TEXAS	006	HOUSTON DEPT. OF PUBLIC HEALTH
06	45	TEXAS	007	SAN ANTONIO METRO. HEALTH DISTRICT
07	16	IOWA	001	POLK COUNTY PHYSICAL PLANNING
07	16	IOWA	002	LINN COUNTY HEALTH DEPARTMENT
07	16	IOWA	003	UNIVERSITY HYGIENIC LABORATORY
07	17	KANSAS	001	STATE OF KANSAS
07	26	MISSOURI	001	LABORATORY SERVICES PROGRAM
07	26	MISSOURI	002	ST. LOUIS COUNTY
07	26	MISSOURI	003	ST. LOUIS CITY
07	26	MISSOURI	004	KANSAS CITY
07	26	MISSOURI	005	SPRINGFIELD
07	26	MISSOURI	006	AMAX LEAD CO. OF MO, BOSS, MO
07	26	MISSOURI	007	ST. JOE LEAD CO., HERCULANEUM, MO
07	28	NEBRASKA	001	STATE OF NEBRASKA
07	28	NEBRASKA	002	LINCOLN
07	28	NEBRASKA	003	OMAHA
08	06	COLORADO	001	DEPARTMENT OF HEALTH
08	27	MONTANA	001	MT AIR QUAL. BUREAU, DEPT. OF H&ENV.
08	27	MONTANA	002	YELLOWSTONE CNTY. AIR POLL. CONT. AGY.
08	27	MONTANA	003	GREAT FALLS CITY-CNTY. HEALTH DEPT.
08	27	MONTANA	004	MISSOULA CITY-CNTY HEALTH DEPT.
08	35	NORTH DAKOTA	001	STATE DEPARTMENT OF HEALTH
08	43	SOUTH DAKOTA	001	DEPT. OF HEALTH, DIV. OF ENV. HEALTH
08	46	UTAH	001	STATE BUREAU OF AIR QUALITY
08	52	WYOMING	001	DEPT. OF ENV. QUAL., AIR QUAL. DIV.
09	03	ARIZONA	100	ARIZONA DEPT. OF HEALTH SERVICES
09	03	ARIZONA	200	MARICOPA COUNTY
09	03	ARIZONA	300	PIMA COUNTY
09	05	CALIFORNIA	001	CALIFORNIA AIR RESOURCES BOARD
09	05	CALIFORNIA	004	BAY AREA AIR QUAL. MANAGEMENT DISTRICT
09	05	CALIFORNIA	036	SAN DIEGO AIR POLL. CONTROL DISTRICT
09	05	CALIFORNIA	061	SOUTH COAST AIR QUAL. MANAGEMENT DIST.

Region	State		Reporting Organization	
	No.	Name	No.	Name
09	05	CALIFORNIA	061	SOUTH COAST AIR QUAL. MANAGEMENT DIST.
09	12	HAWAII	120	STATE OF HAWAII, DEPT. OF HEALTH
09	29	NEVADA	100	NEVADA DIV. OF ENV. PROTECTION
09	29	NEVADA	200	WASHOE COUNTY
09	29	NEVADA	300	CLARK COUNTY
09	54	GUAM	100	GUAM EPA
10	02	ALASKA	020	DEPT. OF ENVIRONMENTAL CONSERVATION
10	13	IDAHO	001	DEPARTMENT OF HEALTH AND WELFARE
10	38	OREGON	001	DEPT. OF ENVIRONMENTAL QUALITY
10	49	WASHINGTON	001	DEPT. OF ECOLOGY

APPENDIX D

PRECISION AND ACCURACY DATA BY REPORTING ORGANIZATION

TABLE D-1. CO PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
07001	5	0	26	114	-12	+13	8	0	-15	+23	-08	+09	-05	+05		
**CT	5	0	20	114	-12	+13	8	0	-15	+23	-08	+09	-05	+05		
20001	1	0	3	24	-08	+08	0*	0								
**ME	1	0	3	24	-08	+08	0*	0								
22001	4	4	32	259	-04	+06	12	0	-04	+07	-04	+07	-05	+06		
**MA	4	4	32	259	-04	+06	12	0	-04	+07	-04	+07	-05	+06		
30001	2	0	8	234	-09	+04	25	0	-08	+11	-08	+06	-08	+07		
**NH	2	0	8	234	-09	+04	25	0	-08	+11	-08	+06	-08	+07		
41001	0	2	8	150	-07	+05	8	0	-04	+06	-06	+07	-07	+05		
**RI	0	2	8	150	-07	+05	8	0	-04	+06	-06	+07	-07	+05		
47001	1	0	4	58	-07	+07	4	0	-10	+07	-07	+02	-05	+02		
**VT	1	0	4	58	-07	+07	4	0	-10	+07	-07	+02	-05	+02		
*RG01	13	6	75	839	-08	+07	57	0	-08	+12	-07	+07	-06	+06		
31001	11	2	46	404	-08	+08	23	0	-09	+08	-05	+08	-04	+07		
**NJ	11	2	46	404	-08	+08	23	0	-09	+08	-05	+08	-04	+07		
33001	5	7	53	445	-06	+05	57	0	-06	+08	-04	+05	-03	+03		
**NY	5	7	53	445	-06	+05	57	0	-06	+08	-04	+05	-03	+03		
40001	1	2	11	94	-11	+06	9	0	-15	+08	-13	+06	-11	+07		
**PR	1	2	11	94	-11	+06	9	0	-15	+08	-13	+06	-11	+07		
*RG02	17	11	110	943	-08	+07	89	0	-08	+08	-06	+07	-05	+05		
08001	2	0	8	66	-09	+12	8	0	-07	+12	-06	+04	-06	+08		
**DE	2	0	8	66	-09	+12	8	0	-07	+12	-06	+04	-06	+08		
09001	1	2	12	100	-02	+04	4	0	+00	+05	-02	+03	-04	+03		
**DC	1	2	12	100	-02	+04	4	0	+00	+05	-02	+03	-04	+03		
21001	5	2	28	325	-06	+07	31	0	-09	+17	-06	+09	-07	+04		
**MD	5	2	28	325	-06	+07	31	0	-09	+17	-06	+09	-07	+04		
39001	17	0	88	549	-08	+10	22	0	-14	+10	-14	+05	-14	+04		
39002	1	2	8	97	-03	+04	18	0	-06	-01	-02	+02	-01	+02		
39003	4	2	24	119	-07	+05	8	0	-06	+08	-03	+06	-04	+05		
**PA	22	4	120	765	-08	+09	48	0	-11	+07	-10	+07	-11	+07		
48001	6	2	32	215	-05	+05	8	0	-04	+01	-06	+01	-04	+00		
48003	4	0	16	105	-10	+09	26	0	-08	+05	-07	+12	-10	+21		
**VA	10	2	48	320	-07	+07	34	0	-07	+04	-08	+11	-11	+18		
50001	1	0	4	26	-12	+06	4	0	-09	+05	-04	+05	-08	+01		

(continued)

TABLE D-1. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
50002	2	0	8	96	-13	+11	8	0	-17	+00	-05	+01	-07	+01		
**WV	3	0	12	122	-13	+10	12	0	-15	+05	-05	+03	-07	+01		
*RG03	43	10	228	1,698	-08	+08	137	0	-11	+10	-08	+08	-11	+10		
01012	0	0	16	89	-13	+12	8	0	-07	+08	-06	+08	-05	+06		
01013	2	2	0	0*			0*	0								
**AL	2	2	16	89	-13	+12	8	0	-07	+08	-06	+08	-05	+06		
10001	1	0	4	48	-25	+22	7	0	-21	+20	-15	+21	-15	+18		
10003	2	0	8	60	-22	+07	8	0	-20	-02	-11	+04	-14	+08		
10011	3	2	20	473	-06	+07	30	0	-10	+12	-08	+09	-08	+08		
10012	3	2	20	142	-10	+05	11	0	-25	+12	-19	+09	-16	+08		
10013	3	2	19	127	-03	+04	18	0	-08	+13	-04	+07	-03	+06		
10016	1	0	4	57	-16	+10	4	0	-10	+21	-07	+15	-09	+09		
10017	3	2	20	126	-07	+06	7	0	-08	+11	-12	+11	-18	+09		
10018	3	2	16	115	-05	+04	6	0	-04	+14	-01	+10	-05	+06		
**FL	19	10	111	1,148	-10	+09	91	0	-15	+14	-10	+11	-10	+10		
11010	2	2	16	145	-12	-01	8	0	-33	+06	-16	+10	-13	+05		
**GA	2	2	16	145	-12	-01	8	0	-33	+06	-16	+10	-13	+05		
18001	7	0	24	133	-07	+04	23	0	-25	+15	-07	+05	-07	+06		
18002	1	2	11	51*	-11	+10	5	0	-10	+09	-12	+05	-04	+01		
**KY	8	2	35	184	-08	+06	28	0	-23	+15	-08	+06	-06	+05		
25100	1	0	4	39	-06	+04	4	0	-15	+07	-09	+05	-08	+08		
**MS	1	0	4	39	-06	+04	4	0	-15	+07	-09	+05	-08	+08		
34001	4	0	14	82	-12	+09	14	0	-11	+07	-07	+04	-06	+02		
34002	2	0	8	59	-11	+08	8	0	-06	+08	-04	+05	-06	+07		
34003	3	2	20	130	-07	+05	22	0	-11	+06	-04	+05	-05	+03		
**NC	9	2	42	271	-09	+07	44	0	-10	+07	-05	+05	-06	+04		
42001	2	0	8	56	-14	+10	56	0	-17	+13	-07	+07	-07	+05		
**SC	2	0	8	56	-14	+10	56	0	-17	+13	-07	+07	-07	+05		
44002	3	2	20	109	-07	+06	35	0	-13	+13	-09	+08	-09	+08		
44003	3	2	20	120	-06	+02	28	0	-10	+07	-06	+06	-04	+03		
44004	1	0	4	33	-01	+01	9	0	-05	+04	-05	+03	-06	+04		
44005	1	0	3	43	-05	+03	6	0	-11	+02	-07	+03	-06	+07		
**TN	8	4	47	305	-06	+04	78	0	-11	+09	-07	+07	-07	+06		
*RG04	51	22	279	2,237	-10	+08	317	0	-16	+12	-08	+08	-08	+07		
14001	7	1	32	338	-12	+05	7*	0	-15	+07	-08	+06	-05	+06		
14003	4	1	19	174	-06	+10	8	0	-09	+08	-02	+04	-02	+05		
**IL	11	2	51	512	-12	+08	15	0	-12	+08	-06	+05	-03	+05		
15001	2	2	12	52*	-10	+08	9	0	-29	+04	-03	+06	-02	+06		
15002	1	0	3	14*	-11	+09	3	0	-12	+03	-09	+09	-10	+09		
15008	3	0	11	63	-08	+05	11	0	-05	+01	-02	+05	-03	+06		
15100	1	0	6	22	-12	+05	5	0	-37	+21	-05	+02	-03	+04		
**IN	7	2	32	151*	-10	+07	28	0	-24	+10	-04	+06	-03	+06		
23001	4	0	18	111	-07	+04	8	0	-09	+12	-09	+06	-10	+03		
23002	3	2	21	121	-10	+13	8	0	-15	+19	-05	+04	-03	+04		

(continued)

TABLE D-1. (Continued)

	AUTOMATED ANALYZERS															
			PRECISION				ACCURACY									
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
**MI	7	2	39	232	-10	+10	16	0	-12	+15	-07	+05	-08	+05		
24001	5	2	24	295	-14	+08	17	0	-11	+12	-06	+04	-08	+02		
**MN	5	2	24	295	-14	+08	17	0	-11	+12	-06	+04	-08	+02		
36001	1	2	12	75	-02	+09	3	0	+02	+05	-07	+10	-05	+12		
36006	0	2	7	37	-07	+05	4	0	-18	+14	-16	+06	-03	+08		
36007	1	0	4	33	-07	+04	4	0	-12	+02	-09	-01	-05	-02		
36008	3	2	20	120	-08	+09	6	0	-21	+16	-14	+13	-16	+16		
36009	0	2	8	43	-05	+06	4	0	-10	+10	-03	+00	-10	+01		
36010	0	2	8	41	-13	+08	4	0	-24	+12	-07	+03	-08	+04		
36012	1	0	2	14*	-05	+07	2	0	+06	+06	-12	+12	-01	+06		
36014	1	0	4	16*	-06	+07	2	0	-04	+04	-05	+10	-08	+05		
36015	2	0	8	58	-08	+03	4	0	-08	-01	-12	+06	-15	+11		
36016	1	0	4	25	-01	+07	6	0	-06	+08	-03	+05	-05	+04		
**OH	10	10	77	462	-08	+08	39	0	-13	+10	-10	+08	-09	+08		
55001	5	2	28	184	-07	+10	8	0	-05	+14	-04	+05	-08	+06		
**WI	5	2	28	184	-07	+10	8	0	-05	+14	-04	+05	-08	+06		
*RG05	45	20	251	1,836	-11	+09	123	0	-16	+13	-07	+06	-07	+07		
19001	1	2	12	81	-10	+09	10	0	-09	+03	-10	+06	-09	+09		
**LA	1	2	12	81	-10	+09	10	0	-09	+03	-10	+06	-09	+09		
32001	4	0	16	90	-06	+09	14	0	-09	+17	-11	+10	-11	+09		
32002	3	2	17	105	-06	+06	19	0	-14	+08	-09	+05	-12	+05		
**NM	7	2	33	195	-06	+07	33	0	-14	+14	-10	+07	-12	+07		
37101	3	0	8	47*	-07	+08	4	0	-22	+12	-14	+00	-16	+05		
37102	0	2	8	42	-21	+11	9	0	-12	+21	-18	+21	-23	+25		
37103	2	0	8	48	-07	+08	9	0	-06	+09	-04	+01	-02	+03		
**OK	5	2	24	137	-13	+11	22	0	-13	+16	-15	+12	-16	+15		
45001	3	5	42	1,899	-08	+06	46	0	-24	+30	-17	+18	-16	+15		
45002	0	2	8	65	-09	+20	8	0	-06	+17	-12	+17	-15	+17		
45003	1	0	4	24	-01	+14	4	0	-07	+11	-03	+05	-09	+06		
45006	1	1	8	51	-09	+03	8	0	-07	+08	-12	+01	-08	+02		
**TX	5	8	62	2,039	-08	+07	66	0	-20	+26	-16	+16	-15	+13		
*RG06	18	14	131	2,452	-09	+07	131	0	-18	+21	-14	+13	-14	+12		
16001	2	0	7	61	-11	+10	5	0	-04	-03	-04	-02	-03	-02		
16002	2	0	8	51	-13	+03	6	0	-10	+07	-02	+05	-10	+01		
16003	1	0	5	37	-07	+11	5	0	-15	+07	-07	+06	-04	+05		
**IO	5	0	20	149	-12	+09	16	0	-11	+06	-05	+05	-09	+03		
17001	3	0	12	66	-10	+09	6	0	-21	+44	-06	+07	-06	+06		
**KS	3	0	12	66	-10	+09	6	0	-21	+44	-06	+07	-06	+06		
26001	0	1	4	21	-17	+28	6	0	-15	+28	-06	+06	-12	+01		
26002	4	0	20	168	-12	+11	8	0	-02	+17	-05	+10	-08	+04		
26003	0	2	11	61	-32	+19	6	0	-36	+33	-21	+10	-23	+05		
26004	2	1	12	76	-09	+10	6	0	-32	+27	-20	+12	-13	+03		
26005	1	0	4	26	-07	+09	6	0	-13	+15	-05	+10	-06	+11		
**MO	7	4	51	352	-17	+16	32	0	-18	+24	-12	+11	-14	+07		

(continued)

TABLE D-1. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
					LOW	UP			LOW	UP	LOW	UP	LOW	UP	LOW	UP
28002	2	0	8	42	-06	+04	6	0	-09	+07	-04	+05	-04	+04		
28003	2	0	8	47	-04	+06	4	0	-07	+06	-09	+11	-02	+00		
**NB	4	0	16	89	-05	+05	10	0	-08	+06	-06	+08	-03	+03		
*RG07	19	4	99	656	-14	+13	64	0	-18	+21	-09	+09	-11	+06		
06001	11	2	51	311	-10	+09	19	4	-11	+06	-07	+11	-11	+12	-01	+03
**CO	11	2	51	311	-10	+09	19	4	-11	+06	-07	+11	-11	+12	-01	+03
27002	1	0	4	34	-12	+11	4	0	-34	+34	-29	+24	-14	+05		
27003	1	0	4	45	-10	+05	5	0	-17	+12	-18	+15	-18	+16		
27004	0	0	4	49	-09	+09	4	0	-18	+12	-11	+07	-07	+05		
**MT	2	0	12	128	-11	+09	13	0	-23	+19	-19	+15	-14	+09		
46001	6	2	31	376	-03	+04	34	0	-06	+07	-04	+04	-05	+05		
**UT	6	2	31	376	-03	+04	34	0	-06	+07	-04	+04	-05	+05		
*RG08	19	4	94	815	-08	+08	66	4	-12	+11	-09	+10	-09	+08	-01	+03
03100	3	0	8	54	-09	+10	4	4	-20	+05	-12	+06	-07	+06	-01	+03
03200	6	2	14	39*	-10	+05	6*	0	-26	+11	-04	+03	-04	+07		
03300	1	2	12	60	-03	+05	4	0	-06	+09	-04	+01	-05	+00		
**AZ	10	4	34	153*	-08	+08	14	4	-22	+10	-07	+04	-06	+06	-01	+03
05001	25	3	81	450*	-06	+11	33	0	-09	+12	-07	+07	-08	+07		
05004	11	4	64	418	-03	+04	31	0	-08	+05	-03	+02	-03	+01		
05036	5	2	27	168	-04	+08	8	2	-12	+08	-07	+05	-08	+02	-08	+02
05061	17	3	94	595	-04	+10	25	0	-05	+12	-03	+09	-05	+06		
**LA	58	12	266	1,631	-05	+09	97	2	-09	+11	-06	+07	-06	+05	-08	+02
12120	0	2	6	91	-12	+07	80	0	-07	+16	-08	+07	-07	+07		
**HI	0	2	6	91	-12	+07	80	0	-07	+16	-08	+07	-07	+07		
29100	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
29200	2	0	8	54	-07	+05	8	0	-07	+03	-03	+02	-02	+02		
29300	1	2	8	50*	-04	+05	5	5	-01	+02	-07	+10	-06	+07	-06	+08
**NV	5	2	16	104*	-06	+05	13	5	-05	+04	-06	+07	-04	+05	-06	+08
*RG09	73	20	322	1,979	-06	+09	204	11	-10	+14	-07	+07	-06	+06	-06	+07
02020	5	0	12	94	-03	+02	12	0	-03	+02	-06	+05	-09	+05		
**AK	5	0	12	94	-03	+02	12	0	-03	+02	-06	+05	-09	+05		
13001	2	0	8	78	-07	+06	4	0	-09	+01	-06	+02	-05	+05		
**IO	2	0	8	78	-07	+06	4	0	-09	+01	-06	+02	-05	+05		
38001	5	2	28	365	-04	+06	44	0	-16	+04	-09	+05	-09	+02		
**OR	5	2	28	365	-04	+06	44	0	-16	+04	-09	+05	-09	+02		
49001	14	2	59	700	-08	+03	40	8	-10	+10	-09	+08	-10	+07	-16	+11
**WA	14	2	59	700	-08	+03	40	8	-10	+10	-09	+08	-10	+07	-16	+11
*RG10	26	4	107	1,237	-07	+05	100	8	-13	+08	-09	+06	-09	+05	-16	+11
NATION	324	115	1,696	14,692	-09	+08	1,288	23	-14	+13	-09	+08	-09	+08	-10	+09

TABLE D-2. CONTINUOUS SO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
					LOW	UP			LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
									LOW	UP	LOW	UP	LOW	UP	LOW	UP
07001	17	2	75	530	-16	+12	22	0	-13	+12	-10	+09	-09	+07		
**CT	17	2	75	530	-16	+12	22	0	-13	+12	-10	+09	-09	+07		
20001	0	2	8	100	-09	+07	8	0	-02	+10	-01	+07	-02	+08		
**ME	0	2	8	100	-09	+07	8	0	-02	+10	-01	+07	-02	+08		
22001	6	11	68	520	-12	+10	21	0	-10	+11	-08	+12	-10	+11		
**MA	6	11	68	520	-12	+10	21	0	-10	+11	-08	+12	-10	+11		
30001	4	1	22	625	-12	+09	65	0	-16	+11	-13	+07	-12	+06		
**NH	4	1	22	625	-12	+09	65	0	-16	+11	-13	+07	-12	+06		
41001	0	3	16	404	-08	+08	16	0	-14	+06	-12	+05	-13	+05		
**RI	0	3	16	404	-08	+08	16	0	-14	+06	-12	+05	-13	+05		
47001	2	1	10	84	-12	+04	9	0	-11	+02	-10	+02	-11	+04		
**VT	2	1	10	84	-12	+04	9	0	-11	+02	-10	+02	-11	+04		
*RG01	29	20	199	2,263	-12	+09	141	0	-14	+11	-12	+08	-11	+08		
31001	11	8	60	428	-12	+12	34	0	-08	+10	-07	+08	-05	-02		
**NJ	11	8	60	428	-12	+12	34	0	-08	+10	-07	+08	-05	-02		
33001	13	17	135	768	-07	+07	205	0	-10	+12	-08	+10	-08	+09		
**NY	13	17	135	768	-07	+07	205	0	-10	+12	-08	+10	-08	+09		
40001	3	0	15	130	-13	+06	13	0	-17	+01	-09	+04	-09	+04		
**PR	3	0	15	130	-13	+06	13	0	-17	+01	-09	+04	-09	+04		
55001	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
**VI	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
*RG02	29	25	210	1,326	-10	+09	252	0	-11	+11	-08	+10	-08	+09		
08001	7	1	32	273	-09	+08	8	0	+00	+06	-04	+09	-04	+03		
**DE	7	1	32	273	-09	+08	8	0	+00	+06	-04	+09	-04	+03		
09001	0	2	8	62	-13	+08	4	0	-04	+03	-04	+04	-03	+06		
**DC	0	2	8	62	-13	+08	4	0	-04	+03	-04	+04	-03	+06		
21001	1	5	24	288	-09	+08	22	0	-15	+09	-11	+06	-12	+07		
21003	2	0	8	54	-10	+09	8	0	-13	+12	-13	+09	-10	+05		
21005	1	0	4	32	-12	+04	5	0	-16	+01	-12	+02	-09	+04		
**MD	4	5	36	374	-10	+08	35	0	-16	+09	-12	+06	-11	+05		
39001	14	12	121	748	-10	+12	33	0	-14	+14	-13	+11	-11	+10		
39002	2	5	28	451	-07	+05	34	0	-06	+03	-07	+05	-07	+07		
39003	2	5	28	164	-13	+08	8	0	-15	+07	-15	+09	-13	+08		

(continued)

TABLE D-2. (Continued)

			AUTOMATED ANALYZERS															
			PRECISION				ACCURACY											
	NO. SITES								PROBABILITY LIMITS									
REP.ORG./ STATE/ REGION	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
**PA	18	22	177	1,363	-10	+10	75	0	-12	+09	-11	+08	-10	+08		
48001	3	7	40	267	-10	+05	12	0	-12	+07	-10	+07	-10	+05		
48003	4	0	16	94	-16	+04	26	0	-06	+04	-06	+07	-06	+10		
**VA	7	7	56	361	-12	+05	38	0	-08	+05	-07	+07	-09	+09		
50001	1	3	20	128	-07	+09	20	4	-12	+10	-05	+09	-07	+07	-07	+04
50002	3	3	24	247	-09	+08	24	0	-12	+11	-06	+09	-07	+07		
**WV	4	6	44	375	-08	+09	44	4	-12	+10	-05	+09	-07	+07	-07	+04
*RG03	40	43	353	2,808	-10	+09	204	4	-12	+09	-09	+08	-09	+08	-07	+04
01012	1	0	1	0*			0*	0								
01013	0	1	6	29	-12	+04	2	0	-03	+08	-06	+03	-07	+00		
01015	1	0	4	7*	-11	+22	0*	0								
01016	0	0	36	2,821	-07	+10	12	12	-06	+04	-07	+05	-05	+07	-07	+05
**AL	2	1	47	2,857	-07	+11	14	12	-06	+05	-07	+05	-06	+07	-07	+05
10001	1	0	4	50	-22	+18	6	0	-30	+06	-19	+08	-14	-02		
10002	3	0	12	149	-27	+19	6	0	-44	+48	-27	+42	-23	+38		
10003	2	0	8	67	-23	+09	6	0	-26	+23	-21	+24	-30	+25		
10004	1	0	4	46	-14	+04	6	0	-21	+18	-23	+30	-23	+32		
10005	0	0	2	5	-09	+06	0	0								
10007	0	0	6	29	-24	+21	6	2	-25	+36	-21	+26	-13	+14	-29	+27
10011	3	1	16	434	-13	+04	18	0	-23	+17	-20	+18	-19	+21		
10012	3	2	27	184	-14	+12	9	2	-13	+11	-06	+10	-09	+08	-08	+03
10013	1	2	16	208	-10	+02	12	0	-19	+09	-14	+07	-15	+10		
10015	0	0	8	70	-11	+14	6	0	-65	+73	-39	+46	-33	+42		
10016	1	0	4	52	-10	+02	6	0	-19	+08	-03	+05	-02	+05		
10018	2	0	3	7*	-01	+09	3	0								
**FL	17	5	110	1,301	-17	+10	84	4	-28	+23	-20	+20	-19	+20	-14	+10
11010	10	1	36	364	-21	+06	10*	1	-19	+14	-19	+14	-19	+16		
**GA	10	1	36	364	-21	+06	10*	1	-19	+14	-19	+14	-19	+16		
18001	8	0	29	166	-15	+02	29	2	-19	+12	-13	+09	-15	+09		
18002	0	4	12	58*	-17	+21	7	0	-05	+12	-07	+13	-08	+11		
18003	0	0	48	4,017	-15	+11	22	14	-16	+11	-13	+14	-14	+17	-15	+15
**KY	8	4	89	4,241	-15	+11	58	16	-17	+12	-13	+12	-15	+13	-15	+15
25100	1	1	15	165	-16	+09	11	0	-31	+10	-19	+03	-16	+03		
**MS	1	1	15	165	-16	+09	11	0	-31	+10	-19	+03	-16	+03		
34001	4	0	56	409	-07	+04	23	2	-12	+11	-07	+08	-07	+09	-01	+00
34002	1	0	4	31	-12	+04	5	0	-10	+04	-05	+02	-03	-01		
34003	0	1	11	15*	-23	+07	6	0	-19	+07	-25	+07	-20	+09		
**NC	5	1	71	455	-09	+05	34	2	-14	+10	-12	+10	-10	+09	-01	+00
42001	3	1	18	68*	-12	+09	69	0	-15	+11	-10	+12	-11	+09		
**SC	3	1	18	68*	-12	+09	69	0	-15	+11	-10	+12	-11	+09		
44001	2	0	12	185	-10	+07	13	6	-14	+09	-09	+08	-08	+09	-06	+04
44002	1	0	4	29	-12	+06	8	0	-14	+15	-15	+20	-15	+16		
44003	0	1	4	24	-10	+04	8	0	-23	+15	-15	+10	-13	+12		
44006	0	0	132	10,327	-11	+11	54	50	-18	+15	-11	+11	-09	+13	-08	+09
**TN	3	1	152	10,565	-11	+11	83	56	-17	+14	-12	+12	-10	+12	-08	+09

(continued)

TABLE D-2. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
*RG04	49	15	538	20,016	-13	+11	363	91	-19	+15	-14	+13	-14	+13	-10	+10
14001	10	10	84	916	-11	+11	21	0	-10	+14	-11	+14	-09	+12		
14003	6	3	34	270	-15	+15	11	0	-10	+15	-07	+09	-08	+09		
**IL	16	13	118	1,186	-12	+12	32	0	-10	+14	-09	+12	-08	+11		
15001	3	6	34	154*	-12	+09	28	0	-14	+08	-12	+08	-11	+08		
15002	1	0	4	23	-19	+10	6	0	-27	+16	-14	+05	-13	+00		
15005	1	0	8	38	-10	+11	5	0	-10	+10	-10	+14	-07	+09		
15008	2	0	12	67	-06	+11	12	0	-06	+09	-06	+10	-07	+09		
15010	0	0	8	41	-07	+08	8	0	-11	+13	-13	+13	-07	+07		
15100	3	0	22	102	-13	+09	25	0	-16	+11	-13	+11	-12	+11		
**IN	10	6	88	425	-11	+10	84	0	-14	+11	-12	+10	-11	+09		
23001	2	7	36	225	-13	+08	12	0	-14	+05	-13	+08	-13	+11		
23002	4	4	28	140*	-27	+15	8	0	-13	+17	-08	+12	-11	+12		
**MI	6	11	64	365	-20	+12	20	0	-15	+11	-12	+10	-12	+11		
24001	4	8	46	554	-10	+10	24	4	-16	+14	-11	+10	-10	+07	-20	+08
**MN	4	8	46	554	-10	+10	24	4	-16	+14	-11	+10	-10	+07	-20	+08
36001	0	2	8	42	-13	+16	4	0	-32	+30	-31	+21	-32	+20		
36002	2	3	20	89*	-11	+10	6	0	-20	+20	-14	+13	-09	+14		
36003	2	0	4	23*	-07	+08	4	0	-13	+14	-19	+18	-20	+23		
36004	3	0	8	112	-26	+28	3	0	-09	+21	-10	+22	-06	+22		
36006	0	3	13	68	-20	+05	4	0	-13	+01	-11	+10	-09	+13		
36007	0	2	8	60	-08	+07	4	0	-11	+08	-09	+05	-07	+04		
36008	4	3	21	126	-10	+11	8	0	-09	+09	-07	+07	-08	+12		
36009	0	4	20	113	-19	+18	7	0	-25	+24	-13	+20	-08	+13		
36010	1	1	8	38	-15	+04	4	0	-20	+23	-14	+14	-13	+19		
36012	2	0	8	55	-12	+08	4	0	-10	+05	-06	+05	-08	+07		
36013	3	0	11	50*	-17	+11	4	0	-13	+17	-04	+12	-07	+12		
36014	4	0	14	83	-15	+10	7	0	-14	+16	-12	+10	-11	+17		
36015	0	3	12	153	-10	+11	4	0	-21	+09	-19	+10	-18	+13		
36016	0	2	8	49	-09	+09	6	0	-25	+08	-24	+13	-21	+13		
**OH	21	23	163	1,061	-16	+14	69	0	-17	+15	-14	+13	-13	+15		
51001	4	13	67	443	-11	+08	21	7	-11	+14	-12	+11	-12	+09	-08	+02
**WI	4	13	67	443	-11	+08	21	7	-11	+14	-12	+11	-12	+09	-08	+02
*RG05	61	74	546	4,034	-14	+12	250	11	-15	+13	-12	+11	-12	+11	-16	+07
04001	1	1	8	47	-26	+25	8	0	-18	+01	-17	+01	-15	+01		
**AR	1	1	8	47	-26	+25	8	0	-18	+01	-17	+01	-15	+01		
19001	7	1	24	156	-17	+10	17	0	-14	+15	-12	+13	-11	+12		
**LA	7	1	24	156	-17	+10	17	0	-14	+15	-12	+13	-11	+12		
32001	9	0	33	172	-13	+13	30	0	-16	+15	-10	+10	-10	+10		
32002	0	1	3	10*	-15	+03	8	0	-19	+05	-20	+07	-18	+09		
**NM	9	1	36	182	-13	+13	38	0	-17	+13	-13	+11	-12	+10		
37101	4	0	15	77	-19	+06	4	0	-28	+05	-29	+03	-28	+03		
37102	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
37103	1	1	8	48	-10	+09	9	0	-15	+15	-11	+12	-09	+07		
**OK	6	1	23	125*	-17	+08	13	0	-22	+15	-22	+15	-19	+10		

(continued)

TABLE D-2. (Continued)

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	AUTOMATED ANALYZERS PRECISION NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
45001	4	4	92	3,985	-08	+05	107	10	-25	+23	-14	+15	-10	+13	-14	+18
45002	1	0	4	34	-16	+11	4	0	-04	+08	-13	+14	-11	+15		
45003	1	0	4	27	-11	+01	4	4	-15	+00	-14	+00	-07	-01	-09	+02
45006	1	0	16	96	-16	+09	16	0	-18	+10	-16	+09	-16	+08		
**TX	7	4	116	4,142	-08	+05	131	14	-24	+21	-14	+14	-11	+13	-14	+18
*RG06	30	8	207	4,652	-10	+07	207	14	-22	+18	-15	+13	-13	+12	-14	+18
16002	1	1	6	32*	-11	+02	7	0	-19	+12	-13	+08	-11	+06		
16003	1	2	15	76	-11	+09	8	0	-15	+04	-15	+15	-11	+10		
**ID	2	3	21	108	-12	+08	15	0	-17	+08	-14	+12	-11	+08		
17001	0	2	8	49	-24	+23	4	0	-17	+20	-10	+11	-11	+06		
**KS	0	2	8	49	-24	+23	4	0	-17	+20	-10	+11	-11	+06		
26001	3	0	29	145	-33	+27	8	0	-32	+16	-24	+12	-15	+02		
26002	4	1	21	141	-10	+11	8	0	-14	+04	-14	+05	-13	+04		
26003	1	1	11	75	-20	+20	7	0	-20	+23	-16	+11	-13	+08		
26004	1	1	8	50	-14	+06	6	0	-30	+18	-15	+02	-09	+02		
26005	1	0	6	39	-15	+11	6	0	-28	+18	-27	+19	-21	+16		
**MO	10	3	75	450	-22	+19	35	0	-24	+15	-19	+09	-14	+06		
28003	0	1	3	11*	-18	+11	2	0	-11	-11	-16	-08	-12	-07		
**NB	0	1	3	11*	-18	+11	2	0	-11	-11	-16	-08	-12	-07		
*RG07	12	9	107	618	-21	+18	56	0	-22	+13	-17	+10	-13	+06		
06001	0	2	8	51	-22	+12	6	0	-20	+17	-16	+14	-16	+11		
**CO	0	2	8	51	-22	+12	6	0	-20	+17	-16	+14	-16	+11		
27001	2	1	8	86	-19	+29	12	8	-18	+14	[illegible]	+15	-17	+09	-16	+05
**MT	2	1	8	86	-19	+29	12	8	-18	+14	[illegible]	+15	-17	+09	-16	+05
35001	4	0	16	100	-09	+07	16	0	-14	+19	-13	+16	-15	+14		
**ND	4	0	16	100	-09	+07	16	0	-14	+19	-13	+16	-15	+14		
46001	5	2	21	271	-07	+03	21	10	-09	+08	-09	+08	-10	+09	-07	+04
**UT	5	2	21	271	-07	+03	21	10	-09	+08	-09	+08	-10	+09	-07	+04
*RG08	11	5	53	508	-15	+13	55	18	-14	+14	-13	+13	-14	+11	-11	+05
03100	9	0	37	254	-11	+05	12	11	-15	-02	-14	+03	-16	+09	-09	+10
03200	0	1	3	0*			0*	0								
03300	1	1	7	38	-07	+08	5	0	-16	+11	-17	+14	-17	+18		
**AZ	10	2	47	292	-11	+05	17	11	-16	+00	-14	+05	-16	+10	-09	+10
05001	18	2	65	348*	-14	+08	23	0	-17	+15	-13	+13	-14	+15		
05004	7	2	36	228	-20	+09	20	0	-13	+19	-08	+17	-07	+18		
05036	6	0	24	142	-14	+11	7	2	-20	+07	-17	+09	-15	+14		
05061	12	5	79	488	-16	+09	20	0	-18	+17	-15	+16	-17	+15		
**CA	43	9	204	1,206	-16	+09	70	2	-17	+17	-13	+15	-14	+16		
54100	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**GU	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
*RG09	54	11	251	1,498	-15	+09	87	13	-18	+15	-14	+14	-14	+16	-09	+10

(continued)

TABLE D-2. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
									PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
13001	1	0	6	58	-10	+10	6	5			-07	+07	-04	+10	+03	+10
**ID	1	0	6	58	-10	+10	6	5			-07	+07	-04	+10	+03	+10
38001	1	2	8	49*	-15	+15	17	0	-15	+12	-08	+15	-12	+18		
**OR	1	2	8	49*	-15	+15	17	0	-15	+12	-08	+15	-12	+18		
49001	8	3	40	482	-08	+08	28	10	-10	+07	-09	+07	-09	+06	-07	+04
**WA	8	3	40	482	-08	+08	28	10	-10	+07	-09	+07	-09	+06	-07	+04
*RG10	10	5	54	589	-09	+09	51	15	-12	+09	-10	+11	-11	+12	-08	+08
NATION	325	215	2,518	38,312	-12	+11	1,666	166	-16	+14	-12	+11	-12	+11	-13	+12

TABLE D-3. CONTINUOUS NO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY		PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
07001	3	0	12	60	-17	+13	4	2	-28	+17	-08	+01	-12	-01	-11	-07
**CT	3	0	12	60	-17	+13	4	2	-28	+17	-08	+01	-12	-01	-11	-07
22001	4	2	28	261	-18	+13	13	0	-43	+49	-12	+12	-09	+08		
**MA	4	2	28	261	-18	+13	13	0	-43	+49	-12	+12	-09	+08		
30001	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**NH	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
41001	1	0	4	53	-02	+14	0*	0								
**RI	1	0	4	53	-02	+14	0*	0								
*RG01	9	2	44	374	-17	+15	17	2	-41	+43	-12	+10	-11	+07	-11	-07
31001	5	2	22	145	-13	+14	9	0	-09	+11	-08	+09	-06	+07		
**NJ	5	2	22	145	-13	+14	9	0	-09	+11	-08	+09	-06	+07		
33001	1	4	23	104	-10	+13	59	0	-12	+17	-09	+09	-09	+08		
**NY	1	4	23	104	-10	+13	59	0	-12	+17	-09	+09	-09	+08		
*RG02	6	6	45	249	-12	+13	68	0	-12	+16	-08	+09	-09	+08		
08001	2	0	8	59	-09	+14	8	0	-06	+09	-08	+10	-02	+07		
**DE	2	0	8	59	-09	+14	8	0	-06	+09	-08	+10	-02	+07		
09001	0	2	8	57	-10	+12	4	0	-05	+08	-07	+08	-05	+07		
**DC	0	2	8	57	-10	+12	4	0	-05	+08	-07	+08	-05	+07		
21001	4	1	18	164	-14	+11	12	0	-17	+13	-14	+11	-16	+11		
21003	1	0	2	0*			0*	0								
21005	1	1	8	41	-10	+14	6	0	-07	+21	-09	+15	-12	+14		
**MD	6	2	28	205	-13	+12	18	0	-16	+18	-13	+13	-14	+12		
39001	17	0	72	457	-11	+11	19	0	-18	+16	-10	+11	-19	+15		
39002	0	2	8	97	-07	+05	12	0	-10	+13	-06	+08	-04	+05		
39003	2	2	16	98	-12	+11	4	0	-20	+12	-04	+04	-01	+03		
**PA	19	4	96	652	-11	+10	35	0	-16	+15	-08	+09	-13	+12		
48001	5	0	20	123	-08	+06	11	0	-01	+15	-05	+05	-05	+03		
48003	4	0	16	95	-17	+19	24	0	-06	+05	-03	+07	-06	+14		
**VA	9	0	36	218	-13	+13	35	0	-07	+11	-04	+06	-07	+13		
50001	2	0	8	50	-09	+16	8	0	-02	+14	-02	+10	-03	+10		
50002	2	0	8	84	-05	+11	6	0	-03	+21	+00	+16	-01	+12		
**WV	4	0	16	134	-07	+13	14	0	-02	+18	-02	+14	-02	+11		
*RG03	40	8	192	1,325	-11	+12	114	0	-12	+15	-08	+10	-10	+12		
01014	0	0	1	6	-06	+07	2	0	-07	-03	-06	-01	-04	+01		
**AL	0	0	1	6	-06	+07	2	0	-07	-03	-06	-01	-04	+01		

(continued)

TABLE D-3. (Continued)

REP.ORG./ STATE/ REGION	NO. SITES		AUTOMATED ANALYZERS PRECISION				ACCURACY									
									PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
10001	1	0	4	47	-08	+11	1	0								
10003	1	0	4	31	-27	+19	0*	0								
10011	2	0	5	91	-37	+36	0*	0								
10012	2	0	8	48	-09	+12	0*	0								
10013	1	0	4	23	-09	+11	6	0	-09	+04	-13	+03	-23	+10		
10016	1	0	4	56	-13	+15	1	0								
10017	2	0	0	0*			0*	0								
10018	0	2	3	9*	-26	+26	0*	0								
**FL	10	2	32	305	-23	+23	8*	0	-09	+04	-13	+03	-23	+10		
11010	0	2	8	67	-28	+26	3	0	-45	+69	-30	+36	-23	+24		
**GA	0	2	8	67	-28	+26	3	0	-45	+69	-30	+36	-23	+24		
18001	6	0	21	112	-12	+08	21	0	-24	+25	-16	+13	-14	+10		
18002	1	0	5	17*	-09	+29	4	0	-30	+05	-15	-03	-18	-10		
18003	0	0	3	202	-10	+04	0	0								
**KY	7	0	29	331	-13	+09	25	0	-25	+24	-17	+13	-17	+10		
34002	0	0	3	21	-22	+35	2	0	-06	+09	-11	+05	-11	-01		
34003	1	0	4	14*	-08	+16	5	0	-23	+23	-04	+12	-02	+11		
**NC	1	0	7	35	-18	+28	7	0	-18	+19	-08	+12	-14	+13		
44002	1	0	4	24	-07	+10	6	0	-05	+05	-10	+10	-09	+07		
44006	0	0	2	167	-15	+07	1	0	-07	+10	-03	+01	-07	+03		
**TN	1	0	6	191	-14	+08	7	0	-05	+06	-08	+08	-08	+06		
*RG04	19	4	83	935	-19	+17	52	0	-22	+21	-15	+12	-15	+10		
14001	2	1	16	86	-09	+08	8	2	-05	+04	-09	+10	-06	+06	-07	+06
14003	7	1	26	183	-11	+13	8	0	-14	+09	-11	+06	-17	+08		
**IL	9	2	42	269	-11	+12	16	2	-10	+07	-10	+08	-13	+08	-07	+06
15001	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
15008	1	0	7	42	-13	+09	1	0								
**IN	3	0	7	42*	-13	+09	1*	0								
23002	0	2	8	35*	-18	+22	4	0	-07	+07	+05	+06	-08	+20		
**MI	0	2	8	35*	-18	+22	4	0	-07	+07	+05	+06	-08	+20		
24001	0	2	8	79	-20	+11	7	0	-24	+20	-10	+06	-06	+02		
**MN	0	2	8	79	-20	+11	7	0	-24	+20	-10	+06	-06	+02		
36001	1	0	4	33	-03	+33	4	0	-31	+50	-02	+20	+00	+21		
36006	0	0	1	12	-30	+20	1	0								
36007	1	0	4	32	-19	+13	4	0	-26	+41	-10	+10	-06	+06		
36008	0	2	8	48	-11	+10	6	0	-05	+10	-05	+17	-08	+19		
36009	0	2	8	24*	-37	+25	6	0	-13	+06	-20	+10	-19	+09		
36010	0	0	1	7	-07	+02	2	0	-25	+06	-26	+15	-21	+13		
36014	1	0	4	18	-13	+17	4	0	-18	+12	-10	+06	-07	+03		
36016	1	0	4	28	-08	+07	6	0	-55	+08	-29	+15	-16	+12		
**OH	4	4	34	202	-21	+23	33	0	-32	+28	-17	+16	-14	+15		
51001	0	2	8	51	-11	+05	3	0	-02	+09	-02	+04	-02	+02		
**WI	0	2	8	51	-11	+05	3	0	-02	+09	-02	+04	-02	+02		
*RG05	16	12	107	678	-17	+16	64	2	-24	+21	-13	+12	-12	+11	-07	+06

(continued)

TABLE D-3. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
									PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
04001	1	0	4	26	-02	+03	4	3	-16	+11	-17	+10	-16	+10	-19	+12
**AR	1	0	4	26	-02	+03	4	3	-16	+11	-17	+10	-16	+10	-19	+12
19001	15	2	16	108*	-13	+10	10*	0	-08	+16	-09	+13	-10	+11		
**LA	15	2	16	108*	-13	+10	10*	0	-08	+16	-09	+13	-10	+11		
32001	1	0	3	12*	-14	+14	5	0	-03	+08	-09	+08	-11	+08		
32002	1	0	3	9*	-11	+09	5	0	-16	+06	-15	+05	-12	+02		
**NM	2	0	6	21*	-12	+11	10	0	-13	+10	-12	+07	-12	+06		
37101	2	0	8	48	-09	+08	3	0	-35	+11	-28	+05	-21	-03		
37102	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
37103	3	0	11	62	-16	+10	8	0	-19	+04	-15	+07	-08	+08		
**OK	6	0	19	110	-13	+09	11	0	-22	+05	-18	+08	-15	+10		
45001	2	2	59	2,512	-08	+06	59	0	-27	+26	-13	+11	-13	+10		
45002	1	1	8	53	-16	+18	7	0	-23	+13	-12	+09	-16	-01		
45006	2	1	12	72	-06	+04	12	0	-06	+04	-07	+05	-04	+00		
**TX	5	4	79	2,637	-08	+06	78	0	-25	+23	-12	+10	-12	+09		
*RG06	29	6	124	2,902	-08	+07	113	3	-23	+20	-13	+10	-13	+09	-19	+12
17001	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**KS	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
26001	0	2	12	43	-22	+19	6	0	-80	+33	-66	+20	-51	+15		
26002	4	0	19	125	-12	+16	8	0	-25	+18	-14	+07	-15	+05		
26003	1	1	8	33*	-31	+16	6	0	-14	+21	-13	+10	-11	+06		
26004	1	1	10	60	-16	+14	7	0	-40	+38	-16	+14	-19	+13		
26005	1	0	2	8*	-11	+07	2	0								
**MO	7	4	51	269	-18	+17	29	0	-42	+31	-31	+19	-26	+13		
*RG07	8	4	51	269	-18	+17	29	0	-42	+31	-31	+19	-26	+13		
06001	1	2	15	86	-42	+40	6	6	-22	+21	-16	+13	-10	+11	-12	+12
**CO	1	2	15	86	-42	+40	6	6	-22	+21	-16	+13	-10	+11	-12	+12
35001	2	0	8	47	-09	+08	8	0	-11	+23	-09	+16	-10	+14		
**ND	2	0	8	47	-09	+08	8	0	-11	+23	-09	+16	-10	+14		
46001	3	0	12	120	-09	+12	10	0	-11	+12	-10	+07	-12	+07		
**UT	3	0	12	120	-09	+12	10	0	-11	+12	-10	+07	-12	+07		
*RG08	6	2	35	253	-25	+26	24	6	-14	+18	-12	+12	-11	+11	-12	+12
03200	0	2	0	0*			0*	0								
03300	2	0	7	33*	-08	+06	6	0	-08	+06	-15	+05	-16	+09		
**AZ	2	2	7	33*	-08	+06	6	0	-08	+06	-15	+05	-16	+09		
05001	28	0	85	423*	-13	+15	36	0	-16	+07	-15	+06	-18	+07		
05004	8	4	48	312	-06	+08	24	0	-10	+07	-07	+05	-07	+04		
05036	5	2	28	170	-14	+10	8	7	-26	+18	-15	+02	-09	+06	-10	+07
05061	16	4	86	525	-14	+10	24	0	-27	+18	-15	+10	-14	+08		
**CA	57	10	247	1,430	-12	+12	92	7	-19	+12	-14	+07	-14	+07	-10	+07
29200	0	0	2	11	-03	+00	2	0	-05	-01	-10	+03	-12	+04		

(continued)

TABLE D-3. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LOW	UP	LOW	UP	LOW	UP	LOW	UP
29300	1	0	8	62	-10	+03	5	4	+00	+00	-25	+55	-32	+34	-38	+34
**NV	1	0	10	73	-09	+03	7	4	-04	+02	-27	+45	-27	+26	-38	+34
*RG09	60	12	264	1,536	-12	+11	105	11	-18	+11	-17	+12	-15	+09	-22	+19
38001	1	0	6	38	-17	+17	9	0	-44	+36	-13	+12	-12	+11		
**OR	1	0	6	38	-17	+17	9	0	-44	+36	-13	+12	-12	+11		
49001	0	2	8	94	-28	+23	18	0	-10	+08	-06	+05	-04	+03		
**WA	0	2	8	94	-28	+23	18	0	-10	+08	-06	+05	-04	+03		
*RG10	1	2	14	132	-25	+21	27	0	-26	+22	-09	+08	-07	+06		
NATION	194	58	959	8,653	-14	+13	613	24	-21	+20	-13	+12	-13	+10	-18	+14

TABLE D-4. OZONE PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

REP.ORG./ STATE/ REGION	NO. SITES		AUTOMATED ANALYZERS													
			PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LOW	UP	LOW	UP	LOW	UP	LOW	UP
07001	3	6	18	94*	-10	+06	6*	0	-01	+07	-03	+05	-03	+03		
**CT	3	6	18	94*	-10	+06	6*	0	-01	+07	-03	+05	-03	+03		
20001	2	0	10	127	-07	+10	11	0	-03	+13	-04	+08	-05	+07		
**ME	2	0	10	127	-07	+10	11	0	-03	+13	-04	+08	-05	+07		
22001	5	8	44	320	-14	+10	20	0	-14	+11	-11	+12	-11	+12		
**MA	5	8	44	320	-14	+10	20	0	-14	+11	-11	+12	-11	+12		
30001	3	1	15	338	-16	+09	32	0	-12	+13	-11	+11	-11	+10		
**NH	3	1	15	338	-16	+09	32	0	-12	+13	-11	+11	-11	+10		
41001	1	1	8	129	-09	+08	10	0	-07	+14	-05	+12	-07	+15		
**RI	1	1	8	129	-09	+08	10	0	-07	+14	-05	+12	-07	+15		
47001	2	0	6	39	-05	+09	6	0	-10	+05	-05	+05	-04	+06		
**VT	2	0	6	39	-05	+09	6	0	-10	+05	-05	+05	-04	+06		
*RG01	16	16	101	1,047	-13	+10	85	0	-11	+13	-09	+11	-09	+11		
31001	7	6	49	359	-11	+11	30	0	-10	+09	-09	+08	-09	+10		
**NJ	7	6	49	359	-11	+11	30	0	-10	+09	-09	+08	-09	+10		
33001	9	11	82	433	-11	+08	140	0	-15	+13	-13	+11	-13	+11		
**NY	9	11	82	433	-11	+08	140	0	-15	+13	-13	+11	-13	+11		
40001	0	1	3	30	-06	+07	4	4	-08	+14	-06	+05	-05	+03	-10	+05
**PR	0	1	3	30	-06	+07	4	4	-08	+14	-06	+05	-05	+03	-10	+05
*RG02	16	18	134	822	-11	+10	174	4	-14	+12	-12	+11	-12	+11	-10	+05
08001	4	1	18	136	-08	+08	9	0	-01	+01	-03	+04	-02	+03		
**DE	4	1	18	136	-08	+08	9	0	-01	+01	-03	+04	-02	+03		
09001	1	1	8	69	-06	+10	4	0	-06	+07	-06	+07	-06	+07		
**DC	1	1	8	69	-06	+10	4	0	-06	+07	-06	+07	-06	+07		
21001	8	2	46	463	-07	+07	53	0	-15	+11	-09	+09	-08	+08		
21003	3	0	12	90	-08	+07	13	0	-14	+10	-13	+10	-12	+08		
21005	3	1	16	142	-08	+07	21	0	-12	+08	-07	+10	-06	+08		
**MD	14	3	74	695	-07	+07	87	0	-14	+10	-09	+09	-08	+08		
39001	18	8	109	665	-13	+11	31	0	-11	+13	-12	+13	-11	+11		
39002	2	2	13	103	-05	+06	21	0	-07	+07	-07	+04	-08	+04		
39003	2	1	10	55	-04	+07	4	0	-01	+06	-03	+05	-02	+03		
**PA	22	11	132	823	-12	+11	56	0	-09	+11	-10	+10	-09	+08		
48001	6	5	32	230	-07	+04	23	23	-15	+09	-08	+06	-04	+03	-05	+03
48003	4	0	16	110	-18	+13	24	0	-03	+02	-06	+08	-06	+04		
**VA	10	5	48	340	-12	+08	47	23	-11	+08	-07	+07	-05	+04	-05	+03

(continued)

TABLE D-4. (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
					LOW	UP			LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
									LOW	UP	LOW	UP	LOW	UP	LOW	UP
50001	3	0	12	97	-11	+05	11	0	-09	+09	-08	+08	-08	+06		
50002	1	0	4	44	-06	+11	4	0	-06	+08	-05	+07	-05	+08		
**WV	4	0	16	141	-11	+08	15	0	-07	+09	-06	+08	-07	+07		
*RG03	55	21	296	2,204	-10	+09	218	23	-11	+10	-09	+09	-08	+07	-05	+03
01011	3	0	12	58	-12	+12	13	2	-12	+09	-09	+09	-09	+10		
01012	1	2	12	56	-16	+14	9	0	-17	+10	-18	+10	-22	+07		
01013	0	2	6	36	-19	+05	6	0	-21	+00	-09	+04	-09	+08		
01014	0	0	1	4	-05	+10	3	0	-08	+27	-06	+14	-07	+08		
01015	0	0	4	15	-06	+20	7	0	-02	+11	+00	+08	-01	+10		
**AL	4	4	35	169	-16	+14	38	2	-17	+14	-11	+11	-13	+12		
10001	3	0	12	112	-10	+13	9	0	-16	+08	-16	+07	-17	+09		
10003	0	2	8	69	-21	+18	8	0	-20	+13	-15	+07	-14	+04		
10005	0	0	4	25	-12	+06	5	0			-99	+62	-59	+21		
10007	0	2	1	5*	-06	+06	3	0	-30	+14	-27	+12	-25	+05		
10011	0	1	8	195	-13	+04	15	3	-20	+09	-17	+10	-15	+08	-05	+05
10012	2	2	12	80	-05	+07	9	1	-03	+11	-05	+06	-05	+04		
10013	1	0	12	81	-06	+05	18	0	-06	+05	-05	+03	-11	+05		
10015	0	0	4	42	-09	+16	6	0	-13	+57	-12	+34	-14	+31		
10016	0	2	8	84	-07	+10	7	0	-10	+07	-09	+00	-12	+02		
10017	0	2	8	45	-10	+05	7	0	-31	+29	-14	+09	-11	+03		
10018	1	2	12	102	-05	+06	7	0	-22	+03	-15	+06	-15	+05		
**FL	7	13	89	840	-11	+10	94	4	-21	+18	-19	+14	-17	+10	-05	+05
11010	0	4	12	100	-20	+15	4	0	-35	+20	-15	+10	-09	+08		
**GA	0	4	12	100	-20	+15	4	0	-35	+20	-15	+10	-09	+08		
18001	12	0	39	188*	-12	+09	30	0	-16	+11	-16	+11	-17	+11		
18002	1	1	10	51	-17	+21	5	0	-12	+20	-13	+12	-18	+09		
18003	0	0	6	382	-21	+16	5	0	-15	+17	-09	+08	-10	+08		
**KY	13	1	55	621	-19	+15	40	0	-15	+13	-15	+11	-16	+11		
25100	2	0	25	201	-10	+13	23	0	-14	+18	-11	+10	-09	+07		
**MS	2	0	25	201	-10	+13	23	0	-14	+18	-11	+10	-09	+07		
34001	6	0	44	247	-07	+07	26	0	-13	+16	-14	+15	-14	+12		
34002	1	0	6	19	-15	+11	4	0	-18	+16	-07	+08	-01	+05		
34003	1	2	12	78	-06	+07	16	0	-10	+09	-09	+10	-08	+08		
34004	1	0	3	23	-15	+14	2	0	-10	+27	-13	+12	-13	+12		
**NC	9	2	65	367	-08	+08	48	0	-13	+14	-11	+13	-11	+11		
42001	3	4	28	105*	-11	+08	106	0	-12	+10	-10	+08	-08	+06		
**SC	3	4	28	105*	-11	+08	106	0	-12	+10	-10	+08	-08	+06		
44001	1	1	20	251	-08	+09	20	0	-14	+02	-13	+09	-14	+11		
44002	0	2	6	27*	-09	+07	10	0	-11	+07	-05	+07	-09	+08		
44003	1	1	8	48	-04	+04	12	0	-10	+08	-06	+07	-06	+07		
44004	2	0	4	30*	-07	+05	7	0	-06	+06	-01	+01	-05	+07		
44005	0	2	4	30*	-06	+05	15	0	-09	+05	-04	+05	-04	+04		
44006	0	0	4	271	-23	+17	1	0	-06	+05	-04	+04	-03	+05		
**TN	4	6	46	657	-16	+13	65	0	-12	+06	-08	+07	-09	+08		
*RG04	42	34	355	3,060	-14	+13	418	6	-15	+13	-13	+11	-12	+09	-05	+05

(continued)

TABLE D-4. (Continued)

REP.ORG./ STATE/ REGION	NO. SITES		AUTOMATED ANALYZERS													
			PRECISION				ACCURACY									
				NO.	PROBABILITY LIMITS			NO. AUDITS	PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	PRECISION CHECKS	LOW	UP	NO. AUDITS	AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
14001	18	11	116	1,177	-12	+09	28*	0	-11	+09	-10	+05	-10	+05		
14003	8	1	15	128*	-09	+11	9	0	-11	+12	-16	+10	-15	+08		
**IL	26	12	131	1,305	-12	+09	37*	0	-11	+10	-12	+06	-11	+05		
15001	2	6	33	146	-10	+08	31	0	-15	+12	-11	+11	-12	+09		
15002	2	0	7	33*	-11	+06	8	0	-13	+06	-13	+05	-11	+04		
15003	0	1	4	21	-07	+03	12	0	-14	+04	-08	+02	-08	+02		
15005	1	0	4	21	-11	+13	4	0	-06	+20	-01	+10	-02	+11		
15008	2	0	11	68	-10	+09	6	0	-12	+11	-09	+07	-07	+05		
15010	0	0	8	24	-12	+12	6	0	-05	+12	-07	+06	-07	+05		
15100	1	0	14	65	-14	+14	10	0	-16	+15	-11	+04	-11	+09		
**IN	8	7	81	378	-11	+10	77	0	-14	+12	-11	+08	-10	+08		
23001	4	7	37	198	-10	+09	16	0	-16	+10	-09	+04	-08	+02		
23002	3	1	16	91	-11	+10	5	0	-27	+07	-10	+07	-02	+02		
**MI	7	8	53	289	-11	+09	21	0	-17	+10	-09	+04	-08	+02		
24001	4	2	19	241	-14	+14	17	0	-18	+18	-11	+08	-08	+03		
**MN	4	2	19	241	-14	+14	17	0	-18	+18	-11	+08	-08	+03		
36001	1	2	12	69	-14	+12	4	0	-07	+02	-08	-01	-10	+04		
36002	3	0	12	60	-13	+10	4	0	-15	+15	-15	+14	-12	+11		
36003	1	0	3	29	-10	+14	4	0	-18	+05	-09	-04	-14	-07		
36006	0	2	8	48	-06	+05	4	0	+00	+10	-02	+10	-02	+09		
36007	0	2	8	57	-08	+07	4	0	-12	+14	-15	+12	-15	+10		
36008	5	0	28	168	-11	+11	14	0	-09	+07	-07	+07	-06	+07		
36009	2	1	12	75	-17	+10	10	0	-21	+14	-22	+16	-20	+13		
36010	2	2	12	55*	-11	+09	5	0	-27	+40	-16	+23	-19	+21		
36012	1	1	7	31*	-09	+05	4	0	-22	+20	-15	+12	-12	+07		
36014	1	0	2	11*	-05	+21	4	0	-26	+14	-14	+08	-12	+07		
36015	0	2	8	43	-16	+07	4	0	-09	+10	-01	+03	-03	+05		
36016	0	1	4	34	-09	+08	6	0	-10	+24	-16	+18	-16	+11		
**OH	16	13	116	680	-12	+10	67	0	-17	+16	-13	+12	-13	+10		
51001	16	4	50	325*	-11	+08	22	0	-12	+11	-12	+09	-12	+10		
**WI	16	4	50	325*	-11	+08	22	0	-12	+11	-12	+09	-12	+10		
*RG05	77	46	450	3,218	-12	+10	241	0	-15	+13	-12	+09	-11	+08		
04001	0	2	8	52	-03	+03	8	0	-14	+07	-06	+05	-06	+04		
**AR	0	2	8	52	-03	+03	8	0	-14	+07	-06	+05	-06	+04		
19001	9	6	60	405	-11	+08	42	0	-14	+05	-09	+08	-08	+08		
**LA	9	6	60	405	-11	+08	42	0	-14	+05	-09	+08	-08	+08		
32001	3	0	12	60	-10	+08	9	0	-19	+18	-10	+05	-12	+04		
32002	3	2	16	79*	-07	+05	25	0	-10	+03	-07	+00	-07	+01		
**NM	6	2	28	139*	-08	+06	34	0	-13	+08	-08	+02	-09	+02		
37101	1	1	12	75	-10	+06	4	0	+02	+16	-02	+08	-04	+06		
37102	0	1	4	19	-19	+05	5	0	-28	+06	-20	+00	-20	+00		
37103	1	2	12	72	-08	+06	13	0	-10	+12	-11	+13	-05	+11		
**OK	2	4	28	166	-11	+07	22	0	-17	+17	-15	+13	-13	+13		
45001	8	13	100	4,357	-07	+07	119	0	-17	+29	-12	+17	-12	+16		
45002	2	1	16	124	-18	+13	17	0	-22	+19	-13	+13	-12	+08		
45006	6	0	24	150	-14	+10	25	0	-10	+08	-10	+06	-11	+08		

(continued)

TABLE D-4. (Continued)

			AUTOMATED ANALYZERS													
			PRECISION				ACCURACY									
REP.ORG./ STATE/ REGION	NO. SITES		NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
	SLAMS	NAMS			LOW	UP			LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
**TX	16	14	140	4,631	-07	+08	161	0	-18	+26	-12	+16	-12	+14		
*RG06	33	28	264	5,393	-08	+08	267	0	-19	+21	-12	+13	-12	+12		
16001	1	2	12	75	-09	+29	6	0	-08	+20	-03	+04	-04	+02		
16002	2	0	8	48	-06	+06	18	0	-07	+09	-08	+06	-14	+07		
16003	1	1	9	53	-14	+23	7	0	-11	+08	-05	+06				
**IO	4	3	29	176	-12	+24	31	0	-09	+11	-07	+06	-13	+07		
17001	1	2	12	73	-11	+15	4	0	-25	+19	-21	+03	-17	+01		
**KS	1	2	12	73	-11	+15	4	0	-25	+19	-21	+03	-17	+01		
26001	2	2	26	148	-14	+13	8	0	-17	+13	-19	+14	-19	+12		
26002	5	0	14	91	-07	+07	5	0	-07	+11	-06	+08	-05	+07		
26003	3	1	12	64*	-17	+09	6	0	-17	+12	-14	+02	-15	+05		
26004	1	1	8	50	-15	+12	6	0	-25	+08	-17	+08	-18	+09		
26005	1	0	6	35	-05	+05	6	0	-10	+10	-06	+05	-03	+05		
**MO	12	4	66	388	-13	+11	31	0	-16	+12	-14	+09	-14	+09		
28002	1	0	2	24	-17	+12	0*	0								
28003	1	2	8	43*	-08	+07	4	0	-19	+13	-15	+11	-17	+14		
**NB	2	2	10	67*	-12	+10	4	0	-19	+13	-15	+11	-17	+14		
*RG07	19	11	117	704	-14	+16	70	0	-14	+12	-12	+08	-14	+08		
06001	7	4	43	248	-20	+20	14	0	-22	+17	-20	+16	-20	+15		
**CO	7	4	43	248	-20	+20	14	0	-22	+17	-20	+16	-20	+15		
35001	2	0	8	51	-10	+09	8	0	-14	+10	-14	+11	-14	+11		
**ND	2	0	8	51	-10	+09	8	0	-14	+10	-14	+11	-14	+11		
46001	3	2	14	168	-09	+11	14	12	-07	+06	-04	+03	-02	+02	-05	+02
**UT	3	2	14	168	-09	+11	14	12	-07	+06	-04	+03	-02	+02	-05	+02
*RG08	12	6	65	467	-16	+16	36	12	-15	+12	-14	+11	-14	+11	-05	+02
03100	0	0	7	38	-14	+16	5	5	-08	+03	-04	+04	-04	+06	-03	+04
03200	6	2	23	82*	-14	+06	6*	0	-08	+14	-07	+08	-06	+04		
03300	2	2	18	100	-06	+06	7	0	-06	+16	-02	+07	-04	+10		
**AZ	8	4	48	220	-11	+09	18	5	-09	+13	-05	+07	-05	+07	-03	+04
05001	51	8	168	907*	-13	+12	69	0	-20	+11	-14	+06	-14	+06		
05004	17	4	76	468	-09	+05	41	41	-12	+04	-06	+02	-05	+02	-04	+02
05036	5	2	32	202	-12	+06	8	8	-10	+07	-04	+07	-03	+08	-03	+09
05061	25	4	131	757	-15	+07	33	33	-25	+12	-07	+09	-06	+09	-05	+07
**CA	98	18	407	2,334	-13	+09	151	82	-19	+10	-11	+07	-11	+07	-06	+06
12120	0	1	3	9*	-04	+06	28	0	-21	+22	-10	+12	-09	+14		
**HI	0	1	3	9*	-04	+06	28	0	-21	+22	-10	+12	-09	+14		
29100	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
29200	0	2	8	54	-16	+07	12	4	-16	+09	-13	+12	-06	+09	+00	+03
29300	1	2	11	74	-08	+05	5	5	-01	+01	-11	+07	-11	+06	-13	+07
**NV	3	4	19	128	-12	+06	17	9	-12	+08	-12	+10	-09	+08	-11	+08
*RG09	109	27	477	2,691	-13	+09	214	96	-19	+12	-11	+08	-11	+09	-06	+06

(continued)

TABLE D-4. (Continued)

			AUTOMATED ANALYZERS													
REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
					LOW	UP			LOW	UP	LOW	UP	LOW	UP	LOW	UP
38001	3	2	28	168	-13	+07	32	3	-17	+22	-12	+15	-12	+12	-06	+04
**OR	3	2	28	168	-13	+07	32	3	-17	+22	-12	+15	-12	+12	-06	+04
49001	4	5	28	257	-02	+09	18	0	-14	+15	-10	+08	-08	+06		
**WA	4	5	28	257	-02	+09	18	0	-14	+15	-10	+08	-08	+06		
*RG10	7	7	56	425	-09	+11	50	3	-16	+19	-12	+12	-11	+10	-06	+04
NATION	386	214	2,315	20,031	-12	+10	1,773	144	-16	+14	-12	+10	-11	+10	-06	+05

Explanation of Column Heading Abbreviations for Tables D-5, D-6, D-7, D-8 (Manual Methods)

Column No.	Heading abbreviation	Explanation
6	NO. RESULTS < LIMIT	Number of paired data sets from collocated samplers with either result less than the tabulated values on Form 1: TSP: 20 μg/m^3 SO_2: 40 μg/m^3 NO_2: 30 μg/m^3 Pb: 0.15 μg/m^3

TABLE D-5. TSP PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY						
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP
07001	18	22	161	12	10	-11	+11	169	93			-05	+06		
**CT	18	22	161	12	10	-11	+11	169	93			-05	+06		
20001	8	1	40	16	5	-10	+20	186	87			-06	+09		
**ME	8	1	40	16	5	-10	+20	186	87			-06	+09		
22001	6	17	97	8	1	-14	+22	107	46			-08	+11		
**MA	6	17	97	8	1	-14	+22	107	46			-08	+11		
30001	12	1	60	8	0	-11	+09	119	47			-08	+08		
**NH	12	1	60	8	0	-11	+09	119	47			-08	+08		
41001	6	6	48	8	2	-10	+10	109	40			-07	+08		
**RI	6	6	48	8	2	-10	+10	109	40			-07	+08		
47001	5	1	24	8	1	-08	+09	104	33			-05	+06		
**VT	5	1	24	8	1	-08	+09	104	33			-05	+06		
*RG01	55	48	430	60	19	-12	+15	794	346			-06	+08		
31001	22	9	102	8	0	-08	+14	103	49			-08	+12		
**NJ	22	9	102	8	0	-08	+14	103	49			-08	+12		
33001	70	27	584	50	11	-13	+12	620	206			-04	+06		
**NY	70	27	584	50	11	-13	+12	620	206			-04	+06		
40001	7	7	56	8	0	-21	+12	86	48			-07	+04		
**PR	7	7	56	8	0	-21	+12	86	48			-07	+04		
55001	5	0	?	?	?	???	???	?	?			???	???		
**VI	5	0	?	?	?	???	???	?	?			???	???		
*RG02	104	43	742	66	11	-13	+12	809	303			-06	+07		
08001	6	3	36	8	3	-16	+05	117	9			-11	+07		
**DE	6	3	36	8	3	-16	+05	117	9			-11	+07		
09001	5	4	36	8	0	-15	+09	112	16			-09	+10		
**DC	5	4	36	8	0	-15	+09	112	16			-09	+10		
21001	14	6	120	8	0	-08	+10	104	43			-12	+12		
21002	4	0	21	8	1	-07	+12	105	9			-22	+15		
21003	2	1	18	8	0	-09	+11	107	12			-17	+26		
21005	4	1	22	8	2	-07	+11	112	11			-11	+20		
21006	2	1	26	8	1	-20	+09	95	9			-09	+09		
**MD	26	9	207	40	4	-12	+12	523	84			-14	+16		
39001	63	33	383	12	0	-09	+15	155	104			-06	+10		
39002	13	7	64	12	6	-07	+12	161	172			-08	+05		

(continued)

TABLE D-5. (Continued)

			MANUAL METHODS												
			PRECISION						ACCURACY						
										PROBABILITY LIMITS					
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP
39003	11	4	56	12	0	-10	+12	167	16			-10	+12		
**PA	87	44	503	36	6	-09	+13	483	292			-08	+08		
48001	47	14	240	12	0	-07	+07	171	66			-06	+08		
48002	1	1	8	8	0	-06	+04	109	8			+01	+05		
48003	15	0	64	8	0	-14	+06	87	21			-10	+04		
48005	0	2	12	8	5	-06	+10	113	11			-03	+06		
**VA	63	17	324	36	5	-09	+08	480	106			-07	+07		
50001	14	7	60	8	0	-04	+08	113	16*			-06	+04		
50002	5	4	40	8	3	-11	+06	109	19			-04	+05		
**WV	19	11	100	16	3	-09	+08	222	35			-06	+05		
*RG03	206	88	1,206	144	21	-11	+11	1,937	542			-09	+09		
01011	26	5	172	11	0	-24	+12	127	42			-07	+07		
01012	8	6	52	8	0	-12	+12	101	521			-04	+04		
01013	3	3	20	8	0	-27	+16	90	8			+00	+07		
01014	7	1	38	8	14	-15	+09	189	10			-08	+07		
01015	9	0	48	8	0	-19	+16	110	16			-11	+12		
01016	0	0	22	4	8	-22	+29	51	11			-05	+04		
**AL	53	15	352	47	22	-20	+15	668	608			-05	+04		
10001	13	0	44	8	11	-21	+26	114	29			-08	+14		
10002	5	0	24	8	0	-17	+17	102	10			-08	+05		
10003	7	1	40	8	0	-10	+07	116	47			-13	+14		
10004	7	0	32	8	2	-10	+15	116	13			-13	+04		
10005	0	0	24	8	13	-07	+07	119	17			-08	+07		
10006	4	0	21	6	0	-13	+10	79	9			-07	+08		
10007	0	0	20	8	6	-12	+13	103	3			-07	+05		
10011	7	4	85	11	0	-08	+20	120	74			-12	+17		
10012	15	2	71	8	0	-09	+10	112	73			-09	+07		
10013	5	2	31	8	1	-23	+15	108	38			-04	+02		
10014	2	0	24	6	0	-20	+22	69	7			-11	+05		
10015	2	0	12	8	3	-11	+07	102	5			-06	+04		
10016	9	0	40	8	4	-15	+13	104	13			-06	+06		
10017	7	2	48	11	7	-08	+10	145	15			-09	+10		
10018	10	3	52	8	0	-10	+15	106	68			-05	+08		
**FL	93	14	568	122	47	-14	+15	1,615	421			-10	+11		
11010	40	11	187	16	0	-12	+13	218	51			-06	+14		
**GA	40	11	187	16	0	-12	+13	218	51			-06	+14		
18001	40	6	230	32	6	-37	+43	436	155			-06	+10		
18002	9	6	60	5	15	-05	+13	70	17			-11	+06		
18003	0	0	29	4	2	-09	+16	54	14			-04	+06		
**KY	49	12	319	41	23	-33	+39	560	186			-07	+10		
25100	19	4	98	12	2	-13	+13	167	24			-07	+11		
**MS	19	4	98	12	2	-13	+13	167	24			-07	+11		
34001	50	4	203	31	7	-10	+11	373	219			-06	+05		
34002	8	2	40	8	0	-06	+15	120	15			-05	+04		
34003	11	2	52	8	3	-10	+06	109	26			-03	+08		
34004	5	1	24	8	1	-13	+24	103	8			-04	+08		
**NC	74	9	319	55	11	-11	+14	705	268			-06	+06		

(continued)

TABLE D-5. (Continued)

REP.ORG./ STATE/ REGION	NO. SITES		MANUAL METHODS PRECISION						ACCURACY						
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS		NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS					
						LOW	UP			LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP
42001	10	8	126	16	2	-10	+09	192	250			-03	+04		
**SC	10	8	126	16	2	-10	+09	192	250			-03	+04		
44001	22	3	170	12	1	-12	+05	174	218			-07	+12		
44002	5	6	42	8	2	-11	+15	97	77			-08	+05		
44003	7	6	60	8	0	-04	+05	118	97			-06	+07		
44004	7	2	30	8	0	-07	+08	97	49			-08	+06		
44005	7	4	52	8	0	-05	+07	102	42			-06	+05		
44006	0	0	75	4	7	-10	+15	60	36			-05	+07		
**TN	48	21	429	48	10	-10	+09	648	519			-07	+09		
*RG04	386	94	2,398	357	117	-10	+18	4,773	2,327			-07	+08		
14001	48	21	300	16	1	-12	+12	198	70			-07	+09		
14002	10	4	72	8	0	-12	+11	100	35			-15	+06		
14003	15	1	64	8	0	-16	+12	79	17			-12	+07		
**IL	73	26	436	32	1	-13	+12	377	122			-11	+09		
15001	16	8	152	8	1	-07	+06	110	35			-04	+05		
15002	0	4	24	8	2	-13	+15	111	33			-09	+10		
15003	5	2	31	8	15	-09	+11	109	16			-07	+09		
15005	7	1	32	8	5	-14	+19	111	33			-01	+03		
15008	12	2	60	8	0	-09	+17	109	15			-02	+02		
15009	5	0	20	8	13	-10	+08	98	10			-05	+05		
15010	5	0	40	8	20	-14	+20	101	29			-07	+07		
15100	15	3	88	12	5	-14	+30	158	21			-03	+05		
**IN	65	20	447	68	61	-13	+18	907	192			-06	+07		
23001	39	16	284	16	15	-09	+13	191	73			-05	+07		
23002	14	5	59	6	0	-14	+13	83	20			-02	+03		
**MI	53	21	343	22	15	-11	+13	274	93			-05	+06		
24001	30	11	16	8	2	-06	+05	108	103			-06	+07		
**MN	30	11	16	8	2	-06	+05	108	103			-06	+07		
36001	10	5	64	8	3	-13	+10	112	16			-12	+05		
36002	8	3	44	8	5	-23	+12	88	12			-08	+05		
36003	17	2	93	12	1	-29	+36	164	22			-10	+07		
36004	18	0	72	8	0	-14	+40	112	20			-12	+14		
36005	5	0	24	8	6	-08	+13	98	12			-08	+08		
36006	9	4	56	8	0	-08	+06	109	19			-06	+06		
36007	7	5	36	6	3	-11	+12	79	16			-01	+07		
36008	22	7	120	8	0	-10	+12	115	36			-04	+05		
36009	17	4	108	20	0	-10	+14	202	33			-09	+11		
36010	13	7	100	8	2	-09	+09	105	25			-08	+03		
36012	11	1	52	8	6	-13	+10	104	15			-05	+05		
36013	17	1	54	6	0	-17	+18	85	13*			-12	+09		
36014	20	1	6	6	0	-11	+09	94	23			-15	+02		
36015	9	3	16	8	3	-13	+18	113	17			-12	+19		
36016	10	4	45	6	0	-06	+10	44*	15			-03	+04		
**OH	193	47	890	128	29	-16	+19	1,624	294			-10	+09		
51001	58	16	16	8	6	-05	+10	110	82			-04	+05		
**WI	58	16	16	8	6	-05	+10	110	82			-04	+05		
*RG05	472	141	2,148	266	114	-15	+17	3,400	886			-08	+08		

(continued)

TABLE D-5. (Continued)

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	MANUAL METHODS PRECISION NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	ACCURACY NO. AUDITS	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP
04002	23	3	116	12	160	-23	+20	168	116			-07	+06		
**AR	23	3	116	12	160	-23	+20	168	116			-07	+06		
19001	24	7	122	8	1	-08	+19	114	137			-06	+06		
**LA	24	7	122	8	1	-08	+19	114	137			-06	+06		
32001	40	0	160	16	9	-16	+17	201	135			-09	+09		
32002	7	4	41	9	37	-16	+07	89	29			-10	+05		
**NM	47	4	201	25	46	-17	+14	290	164			-10	+08		
37101	10	2	50	8	6	-12	+12	186	12			-13	+13		
37102	5	3	48	8	2	-18	+19	107	14			-07	+08		
37103	5	3	40	8	0	-05	+04	117	18			-12	+11		
**OK	20	8	138	24	8	-13	+13	330	44			-11	+11		
45001	11	31	445	16	0	-13	+15	215	672			-08	+07		
45002	2	3	110	8	0	-17	+20	94	113			-08	+09		
45003	7	2	80	8	0	-14	+21	99	80			-04	+09		
45004	2	2	25	8	0	-24	+25	91	17			-17	+20		
45005	3	0	18	4	1	-12	+19	9*	25			-05	+05		
45006	4	5	89	8	1	-14	+16	102	80			-06	+07		
45007	1	2	24	8	0	-03	+04	121	32			-03	+01		
**TX	30	45	791	60	2	-15	+17	731	1,019			-08	+08		
*RG06	144	67	1,368	129	217	-16	+17	1,633	1,480			-08	+08		
16001	5	3	51	8	1	-10	+07	111	16			-06	+08		
16002	2	3	22	8	0	-08	+07	0*	20			-09	+00		
16003	27	8	197	11	7	-13	+12	114	41			-07	+11		
**IO	34	14	270	27	8	-11	+09	225	77			-09	+10		
17001	12	8	80	8	2	-39	+50	121	26			-15	+11		
**KS	12	8	80	8	2	-39	+50	121	26			-15	+11		
26001	11	3	8	8	0	-11	+28	0*	22			-12	+14		
26002	4	3	8	8	4	-46	+46	0*	11			-10	+02		
26003	4	3	8	8	0	-09	+12	0*	10			-11	+06		
26004	4	3	8	8	0	-05	+09	0*	10			-06	+03		
26005	5	2	8	8	8	-06	+09	0*	11			-06	+05		
26006	0	0	0	0	0			0	8			-07	+06		
26007	0	0	0	0	0			0	10			-08	+01		
**MO	28	14	40	40	12	-21	+27	0*	82			-10	+08		
28001	17	0	69	11	6	-13	+21	103	21			-11	+11		
28002	2	3	16	4	1	-11	+11	54	4*			-01	+10		
28003	9	3	72	7	5	-07	+06	102	20			-10	+06		
**NB	28	6	157	22	12	-12	+14	259	45			-11	+10		
*RG07	102	42	547	97	34	-21	+24	605*	230			-10	+09		
06001	60	12	249	8	0	-25	+20	147	188			-07	+07		
**CO	60	12	249	8	0	-25	+20	147	188			-07	+07		
27001	18	1	24	12	11	-29	+25	201	117			-04	+03		
27002	3	0	8	4	0	-05	+07	58	9			-04	+01		
27003	3	1	8	4	3	-15	+10	53	14			-02	+06		
27004	3	0	8	4	9	-17	+23	107	22			-05	+05		

(continued)

TABLE D-5. (Continued)

			MANUAL METHODS												
			PRECISION						ACCURACY						
										PROBABILITY LIMITS					
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP
**MT	27	2	48	24	23	-23	+22	419	162			-04	+04		
35001	16	1	79	8	21	-12	+13	116	22			-04	+04		
**ND	16	1	79	8	21	-12	+13	116	22			-04	+04		
43001	22	2	92	8	11	-09	+14	101	79			-03	+03		
**SD	22	2	92	8	11	-09	+14	101	79			-03	+03		
46001	6	8	60	8	0	-10	+10	109	48			-07	+04		
**UT	6	8	60	8	0	-10	+10	109	48			-07	+04		
52001	11	1	48	12	17	-08	+11	149	22			-03	+04		
**WY	11	1	48	12	17	-08	+11	149	22			-03	+04		
*RG08	142	26	576	68	72	-18	+18	1,041	521			-06	+05		
03100	21	0	87	8	0	-15	+14	107	26			-14	+09		
03200	3	5	31	8	0	-14	+16	100	25			-11	+13		
03300	8	4	16	8	0	-13	+19	116	16			-08	+06		
**AZ	32	9	134	24	0	-14	+17	323	67			-12	+10		
05001	54	24	293	30	0	-08	+12	406	77*			-10	+08		
05004	5	9	60	8	0	-07	+12	121	41			-06	+07		
05036	4	3	28	8	0	-03	+13	118	13			-08	+04		
05061	12	10	124	12	1	-10	+11	141	34			-13	+08		
**CA	75	46	505	58	1	-08	+12	786	165			-10	+08		
12120	9	2	44	7	7	-09	+09	83	40			-09	+08		
**HI	9	2	44	7	7	-09	+09	83	40			-09	+08		
29100	12	0	64	8	13	-17	+45	92	9*			-17	+11		
29200	10	2	68	8	0	-07	+10	120	70			-08	+07		
29300	8	3	22	8	0	-03	+05	68	13			-10	+05		
**NV	30	5	154	24	13	-17	+28	280	92			-10	+07		
54100	4	0	?	?	?	???	???	?	?			???	???		
**GU	4	0	?	?	?	???	???	?	?			???	???		
*RG09	150	62	837	113	21	-12	+17	1,472	364			-10	+08		
02020	12	3	12	6	3	-16	+18	76	17			-09	+06		
**AK	12	3	12	6	3	-16	+18	76	17			-09	+06		
13001	18	2	73	12	8	-20	+16	158	65			-06	+09		
**ID	18	2	73	12	8	-20	+16	158	65			-06	+09		
38001	25	9	145	24	26	-09	+08	343	315			-06	+05		
**OR	25	9	145	24	26	-09	+08	343	315			-06	+05		
49001	23	13	117	9	0	-07	+15	111	40			-04	+06		
**WA	23	13	117	9	0	-07	+15	111	40			-04	+06		
*RG10	78	27	347	51	37	-13	+13	688	437			-06	+06		
NATION	1839	638	10,599	1,351	663	-16	+17	17,152	7,436			-08	+08		

TABLE D-6. PB PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

REP.ORG./ STATE/ REGION	NO. SITES		MANUAL METHODS PRECISION						ACCURACY						
						PROBABILITY LIMITS				PROBABILITY LIMITS					
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP
07001	18	2	82	8	0	-09	+11	24	14*	-08	+10	-05	+07		
**CT	18	2	82	8	0	-09	+11	24	14*	-08	+10	-05	+07		
20001	2	0	4	2	0	-05	+07	19	14	-07	+06	-08	+03		
**ME	2	0	4	2	0	-05	+07	19	14	-07	+06	-08	+03		
22001	2	4	25	5	1	-09	+07	57	22	-08	+06	-05	+02		
**MA	2	4	25	5	1	-09	+07	57	22	-08	+06	-05	+02		
30001	7	0	34	5	0	-13	+14	18	9	-19	+23	-26	+33		
**NH	7	0	34	5	0	-13	+14	18	9	-19	+23	-26	+33		
41001	2	2	16	6	0	-09	+07	45	24	-11	+08	-10	+08		
**RI	2	2	16	6	0	-09	+07	45	24	-11	+08	-10	+08		
*RG01	31	8	161	26	1	-09	+09	163	83	-11	+10	-12	+11		
31001	8	2	36	4	5	-23	+27	59	24	-03	+19	+00	+13		
**NJ	8	2	36	4	5	-23	+27	59	24	-03	+19	+00	+13		
33001	7	6	55	0	5	-08	+05	54	15	-13	+17	-16	+10		
**NY	7	6	55	0	5	-08	+05	54	15	-13	+17	-16	+10		
40001	2	3	20	4	1	-03	+06	60	24	-12	+12	-04	+15		
**PR	2	3	20	4	1	-03	+06	60	24	-12	+12	-04	+15		
*RG02	17	11	111	8	11	-15	+16	173	63	-11	+18	-08	+16		
08001	2	0	8	4	2	-11	+16	60	8	-17	+02	-10	+01		
**DE	2	0	8	4	2	-11	+16	60	8	-17	+02	-10	+01		
09001	0	2	4	2	11	-12	+07	16	6	-16	+08	-12	+10		
**DC	0	2	4	2	11	-12	+07	16	6	-16	+08	-12	+10		
21001	4	2	24	6	42	-12	+11	116	55	-13	+04	-13	+04		
**MD	4	2	24	6	42	-12	+11	116	55	-13	+04	-13	+04		
39001	5	0	86	2	9	-16	+20	77	24	-05	+08	-09	+13		
39002	1	2	40	10	66	-21	+32	51	104	-15	+12	-14	+12		
39003	3	2	20	4	1	-11	+14	61	12	-07	+10	-04	+03		
**PA	9	4	146	16	76	-16	+22	189	140	-14	+12	-12	+12		
48001	0	2	8	4	31	-23	+18	34	12	-14	+19	-07	+08		
48003	3	0	12	4	11	-11	+16	53	22	-08	+06	-01	+04		
**VA	3	2	20	8	42	-17	+18	87	34	-11	+12	-04	+06		
50001	7	0	71	8	34	-11	+13	114	60	-03	+07	-09	+06		
**WV	7	0	71	8	34	-11	+13	114	60	-03	+07	-09	+06		

(continued)

TABLE D-6. (Continued)

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY	PROBABILITY LIMITS					
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP
*RG03	25	10	273	44	207	-14	+17	582	303	-13	+10	-12	+09		
01011	1	0	4	2	3	-10	+10	54	4	-03	+08	-05	+05		
01012	0	0	13	7	12	-16	+17	45	15	-06	+02	-02	+02		
01013	2	2	0	0	0			0	0*						
**AL	3	2	17	9	15	-13	+13	99	19	-06	+05	-03	+03		
10011	0	2	6	3	2	-20	+22	38	9	-13	+18	-05	+05		
10012	0	0	28	0	9	-10	+09	110	19	-05	+10	-04	+06		
10013	0	0	5	0	0	-09	+09	55	12	-06	+13	-07	+10		
10017	0	2	16	0	13	-20	+17	43	12	-10	+02	-11	+05		
10018	0	2	52	0	6	-10	+07	71	11	-19	+17	-05	+03		
**FL	0	6	107	3	30	-13	+12	317	63	-11	+13	-07	+07		
11010	0	2	7	7	0	-06	+06	18	12	-03	+02	-04	+02		
**GA	0	2	7	7	0	-06	+06	18	12	-03	+02	-04	+02		
18001	5	0	20	0	1	-34	+15	11	12	-22	+15	-06	+04		
18002	0	2	8	0	0	-06	+10	12	12	-11	+14	-07	+13		
**KY	5	2	28	0	1	-25	+17	23	24	-17	+15	-08	+10		
25100	5	0	20	0	12	-25	+25	0	23	-10	+13	-04	+11		
**MS	5	0	20	0	12	-25	+25	0	23	-10	+13	-04	+11		
42001	0	0	20	12	40	-15	+19	62	12	-02	+08	-03	+08		
**SC	0	0	20	12	40	-15	+19	62	12	-02	+08	-03	+08		
44001	1	0	5	0	7	-19	+19	53	22	-13	+06	-13	+06		
44002	0	2	8	0	0	-22	+24	58	12	-17	+19	-16	+15		
44003	0	0	60	8	4	-04	+06	88	61	-06	+03	-03	+02		
**TN	1	2	73	8	11	-15	+17	199	95	-10	+07	-09	+06		
*RG04	14	14	272	39	109	-15	+16	718	248	-11	+10	-08	+07		
14001	8	0	32	4	1	-12	+10	44	12	-09	+12	-06	+03		
14002	2	1	72	4	0	-06	+10	61	12	-02	+05	-02	+03		
14003	1	0	58	4	0	-12	+20	48	12	-11	+18	-11	+09		
**IL	11	1	162	12	1	-10	+14	153	36	-08	+13	-07	+06		
15001	3	0	16	4	16	-31	+28	17	23			-09	+09		
15008	1	2	20	4	10	-18	+10	24	23			-09	+09		
15010	0	0	6	3	6	-14	+12	6	23			-09	+09		
15100	5	2	60	4	30	-14	+16	51	23			-09	+09		
**IN	9	4	102	15	62	-19	+18	98	92			-09	+08		
23001	9	0	36	8	1	-15	+11	48	47	-13	+05	-14	+05		
23002	6	2	3	3	0	-07	+05	44	18	-05	+07	-03	+04		
**MI	15	2	39	11	1	-12	+09	92	65	-12	+07	-12	+06		
24001	4	2	3	3	2	-09	+08	12	12	-03	+03	-03	+02		
**MN	4	2	3	3	2	-09	+08	12	12	-03	+03	-03	+02		
36001	0	2	8	4	4	-13	+13	38	30	-07	+06	-06	+05		
36006	0	2	8	4	4	-12	+13	38	30	-07	+06	-06	+05		
36008	0	2	8	4	4	-12	+13	38	30	-07	+06	-06	+05		
36009	0	2	8	4	4	-12	+13	38	30	-07	+06	-06	+05		
36010	0	2	8	4	4	-12	+13	38	30	-07	+06	-06	+05		

(continued)

TABLE D-6. (Continued)

			MANUAL METHODS												
			PRECISION						ACCURACY						
										PROBABILITY LIMITS					
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP
**OH	0	10	40	20	20	-12	+13	190	150	-07	+06	-06	+05		
51001	0	2	10	4	6	-10	+10	55	24	-07	+04	-06	+03		
**WI	0	2	10	4	6	-10	+10	55	24	-07	+04	-06	+03		
*RG05	39	21	356	65	92	-13	+13	600	379	-09	+07	-08	+06		
04002	2	0	8	4	48	-43	+51	50	28	-96	+41	-40	+25		
**AR	2	0	8	4	48	-43	+51	50	28	-96	+41	-40	+25		
19001	2	2	?	?	?	???	???	?	?	???	???	???	???		
**LA	2	2	?	?	?	???	???	?	?	???	???	???	???		
32001	2	0	8	6	16	-15	+13	109	32	-08	+04	-05	+06		
32002	0	2	8	3	18	-10	+10	88	25	-07	+02	-06	+06		
**NM	2	2	16	9	34	-13	+12	197	57	-07	+03	-05	+06		
37101	0	1	19	1	32	-23	+35	51	9	-21	+26	-09	+06		
37102	1	1	8	0	3	-21	+23	61	12	-02	+05	-11	+08		
37103	2	0	9	2	6	-19	+11	60	16	-07	+07	-06	+03		
**OK	3	2	36	3	41	-23	+24	172	37	-11	+13	-08	+05		
45001	9	6	130	93	0	-18	+26	118	13*	-14	+19	-01	+24		
45002	1	2	18	0	22	-14	+16	258	23	-17	+18	-15	+15		
45003	7	1	32	4	0	-07	+07	61	24	-06	+00	-08	+01		
45006	0	1	8	4	3	-25	+20	57	14	-24	+25	-10	+12		
**TX	17	10	188	101	25	-16	+19	494	74	-17	+16	-14	+16		
*RG06	26	16	248	117	148	-20	+22	913	196	-38	+29	-18	+16		
16001	1	0	?	?	?	???	???	?	?	???	???	???	???		
16003	2	0	12	12	26	-18	+25	35	18	-09	+07	-08	+10		
**IO	3	0	12	12	26	-18	+25	35	18	-09	+07	-08	+10		
17001	1	1	8	4	19	-20	+21	34	24	-11	+07	-09	+00		
**KS	1	1	8	4	19	-20	+21	34	24	-11	+07	-09	+00		
26001	1	0	4	0	0	-22	+29	0	12	-13	+08	-09	+00		
26002	0	2	4	0	0	-10	+11	0	30	-03	+05	-03	+04		
26003	1	0	?	?	?	???	???	?	?	???	???	???	???		
26004	1	1	4	3	0	-42	+53	0	12	-12	+11	-12	+10		
26006	2	0	4	0	3	-23	+31	0	28	-04	+07	-04	+03		
26007	1	0	3	0	0	-36	+48	0	26	-09	+16	-07	+12		
**MO	6	3	19	3	3	-29	+37	0	108	-08	+10	-08	+08		
28003	2	2	32	4	14	-05	+06	54	22	-07	+03	+00	+06		
**NB	2	2	32	4	14	-05	+06	54	22	-07	+03	+00	+06		
*RG07	12	6	71	23	62	-26	+32	123	172	-09	+09	-08	+08		
06001	5	2	48	4	26	-23	+41	32	24	-12	+14	-05	+07		
**CO	5	2	48	4	26	-23	+41	32	24	-12	+14	-05	+07		
27001	6	0	8	4	1	-39	+28	104	45	-04	+04				
**MT	6	0	8	4	1	-39	+28	104	45	-04	+04				
46001	3	2	20	4	1	-14	+14	55	15	-13	+04	-13	+11		

(continued)

TABLE D-6. (Continued)

			MANUAL METHODS												
			PRECISION						ACCURACY						
	NO. SITES					PROBABILITY LIMITS				PROBABILITY LIMITS					
										LEVEL 1		LEVEL 2		LEVEL 3	
REP.ORG./ STATE/ REGION	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LOW	UP	LOW	UP	LOW	UP
**UT	3	2	20	4	1	-14	+14	55	15	-13	+04	-13	+11		
*RG08	14	4	76	12	28	-32	+29	191	84	-10	+08	-09	+09		
03100	10	0	40	4	4	-11	+09	55	19	-10	+04	-06	+04		
03200	4	2	18	4	2	-11	+06	41	12	-10	+08	-06	+08		
03300	3	0	4	0	0	-09	+12	46	10	-05	+05	-04	+03		
**AZ	17	2	62	8	6	-11	+10	142	41	-09	+06	-06	+05		
05001	24	2	102	10	13	-19	+20	137	28			-12	+09		
05004	10	4	46	4	8	-08	+06	52	12*	-10	+00	-04	+04		
05036	1	2	?	?	?	???	???	?	?	???	???	???	???		
05061	19	3	124	0	1	-05	+06	57	12*	-13	+18	-09	+10		
**CA	54	11	272	14	22	-15	+16	246	52*	-15	+12	-10	+09		
12120	0	0	7	3	0	-25	+35	0	7			-03	+05		
**HI	0	0	7	3	0	-25	+35	0	7			-03	+05		
29300	2	0	?	?	?	???	???	?	?	???	???	???	???		
**NV	2	0	?	?	?	???	???	?	?	???	???	???	???		
*RG09	73	13	341	25	28	-16	+17	388	100	-11	+09	-08	+07		
02020	1	0	?	?	?	???	???	?	?	???	???	???	???		
**AK	1	0	?	?	?	???	???	?	?	???	???	???	???		
13001	5	0	20	4	42	-35	+32	43	12	-03	+06	-03	+04		
**ID	5	0	20	4	42	-35	+32	43	12	-03	+06	-03	+04		
38001	11	2	19	4	0	-07	+05	12	12*	-06	+14	-05	+11		
**OR	11	2	19	4	0	-07	+05	12	12*	-06	+14	-05	+11		
49001	7	2	18	2	0	-09	+12	31	5*	-06	+05				
**WA	7	2	18	2	0	-09	+12	31	5*	-06	+05				
*RG10	24	4	57	10	42	-26	+25	86	29	-06	+10	-05	+08		
NATION	275	107	1,966	369	728	-18	+20	3,937	1,657	-17	+15	-11	+10		

TABLE D-7. MANUAL SO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY						
						PROBABILITY LIMITS				PROBABILITY LIMITS					
										LEVEL 1		LEVEL 2		LEVEL 3	
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LOW	UP	LOW	UP	LOW	UP
10001	3	0	24	8	108	-11	+09	112	12	-09	+06	-07	+04	-09	+07
10004	3	0	24	8	76	-31	+26	77	15	-14	+08	-07	+07	-06	+07
10012	0	0	28	8	41	-46	+42	46	24	-15	+07	-09	+05	-07	+04
10014	0	0	21	6	15	-26	+58	16	22	-26	+05	-23	+04	-17	-03
10017	0	0	10	4	7	-12	+13	7	59	-26	+07	-16	+05	-15	+05
**FL	6	0	107	34	247	-29	+28	258	132	-23	+08	-16	+07	-15	+06
34003	0	0	18	4	34	-48	+42	34	13	-15	+06	-12	+07	-04	+06
**NC	0	0	18	4	34	-48	+42	34	13	-15	+06	-12	+07	-04	+06
*RG04	6	0	125	38	281	-31	+30	292	145	-22	+08	-16	+07	-14	+07
06001	1	0	0	0	0			0	0*						
**NM	1	0	?	?	?	???	???	?	?	???	???	???	???	???	???
*RG06	1	0	?	?	?	???	???	?	?	???	???	???	???	???	???
12120	4	0	18	4	4	-86	+86	5	58	-06	+05	-02	+03	-01	+02
**HI	4	0	18	4	4	-86	+86	5	58	-06	+05	-02	+03	-01	+02
54100	3	0	?	?	?	???	???	?	?	???	???	???	???	???	???
**GU	3	0	?	?	?	???	???	?	?	???	???	???	???	???	???
*RG09	7	0	18	4	4	-86	+86	5	58	-06	+05	-02	+03	-01	+02
NATION	14	0	143	42	285	-33	+31	297	203	-20	+09	-14	+07	-12	+07

TABLE D-8. MANUAL NO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			MANUAL METHODS												
			PRECISION						ACCURACY						
REP.ORG./ STATE/ REGION	NO. SITES		NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS		NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS					
										LEVEL 1		LEVEL 2		LEVEL 3	
	SLAMS	NAMS				LOW	UP			LOW	UP	LOW	UP	LOW	UP
10001	3	0	24	8	103	-51	+49	113	12	-04	+06	-01	+04	+00	+05
10012	0	0	20	8	45	-21	+22	114	24	-09	+07	-05	+05	-08	+06
10017	0	0	20	8	52	-07	+10	119	60	-10	+13	-09	+11	-04	+05
**FL	3	0	64	24	200	-31	+32	346	96	-09	+11	-08	+09	-05	+06
34003	0	0	18	4	6	-07	+10	41	12	-08	+09	+01	+04	+00	+04
**NC	0	0	18	4	6	-07	+10	41	12	-08	+09	+01	+04	+00	+04
*RG04	3	0	82	28	206	-29	+30	387	108	-09	+10	-07	+09	-05	+06
14002	0	0	36	8	1	-13	+08	107	22	-05	+06	-01	+04	-04	+08
14003	0	0	27	8	4	-17	+23	98	25	-04	+07	-06	+06	-06	+05
**IL	0	0	63	16	5	-17	+16	205	47	-04	+07	-04	+05	-05	+07
*RG05	0	0	63	16	5	-17	+16	205	47	-04	+07	-04	+05	-05	+07
19001	12	0	55	8	25	-33	+30	99	17	-01	+04	+00	+02	-01	+02
**LA	12	0	55	8	25	-33	+30	99	17	-01	+04	+00	+02	-01	+02
*RG06	12	0	55	8	25	-33	+30	99	17	-01	+04	+00	+02	-01	+02
16002	0	0	0	0	0			0	3	-20	+09	-20	+08	-17	+09
**IO	0	0	0	0	0			0	3	-20	+09	-20	+08	-17	+09
*RG07	0	0	0	0	0			0	3	-20	+09	-20	+08	-17	+09
NATION	15	0	200	52	236	-27	+27	691	175	-08	+10	-07	+09	-06	+07

APPENDIX E

COMPARISONS OF PARS AND PERFORMANCE AUDIT DATA

TABLE E-1. PARS AND PA DATA FOR CO, PB, TSP, NO_2 (MANUAL) AND SO_2 (MANUAL) METHODS

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  01  STATE  07  CONNECTICUT                  REP ORG  001  LAB  306001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO       6      -3    +0       -1    -1       -1    +0
  PARS      (   8)   (-14) (+22)    ( -8) ( +8)    ( -5) ( +5)

I12128 LEAD    12      -8    +0      -12    +3       -7    +0
  PARS      (  14)   ( -7) ( +9)    ( -4) ( +7)

I11101 HIV     13                     -4    +5
  PARS      (  93)                  ( -4) ( +5)

REGION  01  STATE  20  MAINE                        REP ORG  001  LAB  301001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

I12128 LEAD    12      -7    +2       -6    -2      -12    +6
  PARS      (  14)   ( -6) ( +5)    ( -7) ( +2)

I11101 HIV     14                     -4   +12
  PARS      (  87)                  ( -5) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  01  STATE  22  MASSACHUSETTS             REP ORG  001  LAB  304001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       9     -24   +17       -2    +3       +0    +1
   PARS     (  12)   ( -3) ( +6)   ( -3) ( +6)   ( -4) ( +5)

I12128 LEAD    12     -12    +2      -31   +34       -3    +0
   PARS     (  22)   ( -7) ( +6)   ( -4) ( +2)

I11101 HIV      4                     -8    +9
   PARS     (  46)                 ( -8) (+10)

REGION  01  STATE  30  NEW HAMPSHIRE             REP ORG  001  LAB  302001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6     -13    -3       -1    +2       -3    +3
   PARS     (  25)   ( -7) (+10)   ( -8) ( +6)   ( -7) ( +6)

I12128 LEAD    12     -17    +2       -8   +14       -3    +8
   PARS     (   9)   (-18) (+22)   (-26) (+32)

I11101 HIV      6                     -2    +1
   PARS     (  47)                 ( -7) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  01  STATE  41  RHODE ISLAND               REP ORG  001  LAB  305001

                          ----------------PROBABILITY LIMITS----------------
  POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

 C42101 CO       6       -3    +4      -2    +5      -7    +8
   PARS      (   8)   ( -3) ( +6)   ( -5) ( +7)   ( -5) ( +4)

 I12128 LEAD    12      -20   +13     -11    +3      -8    +0
   PARS      (  24)   (-10) ( +7)   (-10) ( +7)

 I11101 HIV      9                     -6    +6
   PARS      (  40)                 ( -7) ( +7)

REGION  01  STATE  47  VERMONT                    REP ORG  001  LAB  303001

                          ----------------PROBABILITY LIMITS----------------
  POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

 C42101 CO       3       +5    +5      +2    +2     -31   -31
   PARS      (   2)   ( -4) ( +2)   ( -5) ( +1)   ( -1) ( -1)

 I11101 HIV     10                     -3    +4
   PARS      (  33)                 ( -4) ( +5)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

                          REGION AVERAGES

REGION  01

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVFL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      30    -15   +10     -2    +3    -23   +16
   PARS    (  55)  ( -7) (+11)  ( -6) ( +6)  ( -5) ( +5)

I12128 LEAD    60    -14    +5    -17   +14     -9    +5
   PARS    (  83)  (-10) ( +9)  (-11) (+10)

I11101 HIV     56                  -6    +8
   PARS    ( 346)               ( -5) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

        COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  02  STATE  31  NEW JERSEY                 REP ORG  001  LAB  308001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       30     -11    +8      +1    +8      -1    +7
   PARS      (  23)  ( -8) ( +8)  ( -4) ( +7)  ( -4) ( +6)

I12128 LEAD      6     -10   +11      -6    -4      -5    -5
   PARS      (  24)  ( -3) (+19)  ( +0) (+13)

I11101 HIV      11                    -7    +3
   PARS      (  49)               ( -7) (+11)

REGION  02  STATE  33  NEW YORK                   REP ORG  001  LAB  307001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      52                    -1   +11
   PARS      ( 206)               ( -4) ( +5)

REGION  02  STATE  33  NEW YORK                   REP ORG  001  LAB  407008

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       39     -20    -1      -3    +3      -2    +3
   PARS      (  57)  ( -5) ( +7)  ( -3) ( +4)  ( -3) ( +3)

I12128 LEAD     24      -8   +10     -15   +17     -10   +15
   PARS      (  15)  (-12) (+16)  (-15) ( +9)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  02  STATE  40  PUERTO RICO                REP ORG  001  LAB  309001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       6      -6    +2      -9    +6      -8    +4
   PARS     (   9)   (-14) ( +7)   (-12) ( +6)   (-10) ( +6)

I12128 LEAD    12     -38   +25     -23    +9     -17    +9
   PARS     (  24)   (-12) (+11)   ( -4) (+14)

I11101 HIV     22                    -3    +8
   PARS     (  48)                 ( -6) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

                            REGION AVERAGES

REGION  02

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      75      -18    +6      -4    +7       -3    +6
   PARS     (  89)   ( -7) ( +7)   ( -4) ( +5)    ( -4) ( +4)

I12128 LEAD    42      -19   +17     -18   +13      -13   +13
   PARS     (  63)   (-10) (+17)   ( -7) (+15)

I11101 HIV     85
   PARS     ( 303)                  -4   +11
                                  ( -4) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  03  STATE  08  DELAWARE                    REP ORG  001  LAB  313002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6       -22   -18      -5    +4      -2    +1
   PARS     (   8)    ( -7) (+12)    ( -5) ( +3)   ( -6) ( +8)

I12128 LEAD    12       -18    -1     -12    +1      -7    +2
   PARS     (   8)    (-17) ( +2)    ( -9) ( +1)

I11101 HIV     13                      -2   +12
   PARS     (   9)                   (-10) ( +6)

REGION  03  STATE  21  MARYLAND                    REP ORG  001  LAB  312001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    169                      -8   +17
   PARS     (  59)                   (-11) (+11)

REGION  03  STATE  21  MARYLAND                    REP ORG  002  LAB  312001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    169                      -8   +17
   PARS     (   9)                   (-21) (+13)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  03  STATE  21  MARYLAND                      REP ORG  003  LAB  412004

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     16                   +19   +89
   PARS     (  12)                 (-16) (+26)

REGION  03  STATE  21  MARYLAND                      REP ORG  005  LAB  412002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      6                    -8   +10
   PARS     (  11)                 (-11) (+19)

REGION  03  STATE  21  MARYLAND                      REP ORG  006  LAB  412006

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     16                   -10   +20
   PARS     (   9)                 ( -8) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984
REGION  03  STATE  39  PENNSYLVANIA                REP ORG  001  LAB  311002
                      ---------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO      18      -17   +12      -8    +6      -7    +4
  PARS      (  22)   (-13) ( +9)   (-13) ( +5)   (-14) ( +4)
I12128 LEAD    12       -7    +0     -12   +12      -7    +2
  PARS      (  24)   ( -4) ( +7)   ( -8) (+12)
I11101 HIV     19                     +0   +10
  PARS      ( 104)                 ( -6) ( +9)
REGION  03  STATE  39  PENNSYLVANIA                REP ORG  002  LAB  411002
                      ---------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       6       -5    +8      +1    +6      -1    +5
  PARS      (  18)   ( -6) ( -1)   ( -1) ( +1)   ( -1) ( +2)
I12128 LEAD    12      -12    +2      -6    +2     -10    +3
  PARS      ( 104)   (-15) (+11)   (-13) (+11)
I11101 HIV     16                     -2    +6
  PARS      ( 172)                 ( -7) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984
REGION  03  STATE  39  PENNSYLVANIA                  REP ORG  003  LAB  411001
                         ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       15     -17    +9      -2    +4      -1    +2
   PARS     (    8)  ( -6) ( +7)   ( -2) ( +5)   ( -3) ( +4)
I12128 LEAD     12     -20    +3      -8    -3     -12    +1
   PARS     (   12)  ( -6) (+10)   ( -3) ( +3)
I11101 HIV      15                    -5   +10
   PARS     (   16)                (-10) (+12)
REGION  03  STATE  48  VIRGINIA                      REP ORG  001  LAB  315001
                         ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       18      -3    +4      -1    +3      -3    +3
   PARS     (    8)  ( -3) ( +1)   ( -6) ( +1)   ( -4) ( +0)
I12128 LEAD     12      +1    +3      -5    +5      -3    +2
   PARS     (   12)  (-14) (+19)   ( -6) ( +7)
I11101 HIV      15                    -9    +9
   PARS     (   66)                ( -6) ( +7)
REGION  03  STATE  48  VIRGINIA                      REP ORG  002  LAB  415005
                         ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
I11101 HIV       6                    -6    +7
   PARS     (    8)                ( +1) ( +5)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  03  STATE  48  VIRGINIA                      REP ORG  003  LAB  415004

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO      12       -8     +8       -1     +5       +1     +3
   PARS     (  26)    ( -8)  ( +4)    ( -6)  (+11)    (-10)  (+20)

I12128 LEAD    12      -10     +2       -7     +0       -3     -2
   PARS     (  22)    ( -7)  ( +5)    ( -1)  ( +4)

I11101 HIV     22                       +1     +5
   PARS     (  21)                    ( -9)  ( +3)

REGION  03  STATE  48  VIRGINIA                      REP ORG  005  LAB  415001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV      8                       -9    +11
   PARS     (  11)                    ( -2)  ( +6)

REGION  03  STATE  50  WEST VIRGINIA                 REP ORG  001  LAB  314001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO       3      -13    -13       +1     +1       +1     +1
   PARS     (   4)    ( -7)  ( +3)    ( -2)  ( +2)    ( -6)  ( +0)

I12128 LEAD    12       -4    +10       -4     +9      -11     +1
   PARS     (  60)    ( -3)  ( +6)    ( -8)  ( +5)

I11101 HIV     12                       -8     +9
   PARS     (  16)                    ( -5)  ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  03   STATE  50  WEST VIRGINIA           REP ORG  002  LAB  314002

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     24                      -11   +14
   PARS     (  19)                    ( -4) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

                           REGION AVERAGES

REGION  03

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      78     -18   +11      -4    +5      -4    +4
   PARS     (  94)   (-12) ( +9)   ( -9) ( +8)   (-11) (+12)

I12128 LEAD    84     -14    +7     -10    +6      -9    +2
   PARS     ( 242)   (-11) (+10)   (-10) ( +9)

I11101 HIV    526                   -20   +33
   PARS     ( 542)                 ( -8) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  04  STATE  01  ALABAMA                    REP ORG  011  LAB  319001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                      LOW    UP       LOW    UP       LOW    UP       LOW    UP

I12128 LEAD    12      -2     +4       -9     +5       -1     +0
   PARS     (   4)  ( -2) ( +6)    ( -4) ( +4)

REGION  04  STATE  01  ALABAMA                    REP ORG  012  LAB  419001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                      LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO      12     -21     -2       -9     +3       -2     +4
   PARS     (   8)  ( -6) ( +7)    ( -5) ( +7)    ( -5) ( +5)

I12128 LEAD     6      -1     +2       +0     +3       -2     +1
   PARS     (  15)  ( -5) ( +1)    ( -1) ( +1)

I11101 HIV     12                      +2     +4
   PARS     ( 521)                 ( -3) ( +3)

REGION  04  STATE  01  ALABAMA                    REP ORG  014  LAB  419004

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                      LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV      5                      -8    +13
   PARS     (  10)                 ( -7) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  04  STATE  01  ALABAMA                   REP ORG  015  LAB  419005

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      9
   PARS     (  16)                  -5    +5
                                  (-10) (+11)

REGION  04  STATE  10  FLORIDA                   REP ORG  001  LAB  323005

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I42602 NO2      5     -2    -2      -4    -4      -2    +2      -5    -5
   PARS     (  12)  ( -3) ( +6)   ( -1) ( +4)   ( +0) ( +5)

I42401 SO2      5                  -22   +20      -5   +23     +13   +13
   PARS     (  12)  ( -9) ( +6)   ( -6) ( +3)   ( -8) ( +6)

I11101 HIV     38
   PARS     (  29)                 -23   +14
                                  ( -8) (+13)

REGION  04  STATE  10  FLORIDA                   REP ORG  002  LAB  323003

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     19                   -7   +11
   PARS     (   9)                ( -8) ( +5)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  04  STATE  10  FLORIDA                     REP ORG  003  LAB  323004

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     7                   -38    +7
   PARS     (  47)                (-12) (+13)

REGION  04  STATE  10  FLORIDA                     REP ORG  004  LAB  323008

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I42401 SO2     5                    -8    +7     +2    +3     +4    +4
   PARS     (  15)  (-13) ( +7)  ( -7) ( +6)  ( -6) ( +6)

I11101 HIV     6                    -6    +0
   PARS     (  13)               (-12) ( +3)

REGION  04  STATE  10  FLORIDA                     REP ORG  005  LAB  323002

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    19                   -17    +9
   PARS     (  17)               ( -7) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984
REGION  04  STATE  10  FLORIDA                   REP ORG  006  LAB  323006

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     18                   -13   +19
  PARS      (   9)                ( -7) ( +8)
REGION  04  STATE  10  FLORIDA                   REP ORG  007  LAB  323010

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      3                    +2    +5
  PARS      (   2)                ( -7) ( +5)
REGION  04  STATE  10  FLORIDA                   REP ORG  011  LAB  423003

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      15     -14    +0      -3    +6      -4    +6
  PARS      (  30)  ( -8) (+10)   ( -7) ( +9)   ( -6) ( +8)

I12128 LEAD     6      -2    -1      -2    -1      -3    -3
  PARS      (   9)  (-12) (+17)   ( -5) ( +5)

I11101 HIV     60                   -12   +23
  PARS      (  74)                (-10) (+16)
```

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGION 04 STATE 10 FLORIDA REP ORG 012 LAB 423004

POL.CD.	AUDITS	----------------PROBABILITY LIMITS					------------------		
		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
I42401 SO2	5			-8	-6	-11	+4	-1	-1
PARS	(24)	(-13)	(+6)	(-8)	(+4)	(-5)	(+3)		
I12128 LEAD	12	-6	+8	+1	+3	-4	+5		
PARS	(19)	(-4)	(+9)	(-4)	(+5)				
I11101 HIV	50			-8	+6				
PARS	(73)			(-8)	(+6)				

REGION 04 STATE 10 FLORIDA REP ORG 013 LAB 423016

POL.CD.	AUDITS	----------------PROBABILITY LIMITS					------------------		
		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42101 CO	15	-17	+10	-4	+3	-1	+2		
PARS	(18)	(-7)	(+12)	(-3)	(+5)	(-3)	(+5)		

REGION 04 STATE 10 FLORIDA REP ORG 014 LAB 423005

POL.CD.	AUDITS	----------------PROBABILITY LIMITS					------------------		
		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
I42401 SO2	5			-22	+8	-35	+10	-11	-11
PARS	(22)	(-25)	(+5)	(-22)	(+3)	(-16)	(-4)		
I11101 HIV	28			-10	+11				
PARS	(7)			(-10)	(+4)				

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  04  STATE  10  FLORIDA                     REP ORG  015  LAB  423015

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      8
  PARS       (   2)                  -39   +20
                                   ( -5) ( +3)

REGION  04  STATE  10  FLORIDA                     REP ORG  016  LAB  423008

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     10
  PARS       (  13)                   +0    +6
                                   ( -6) ( +6)

REGION  04  STATE  10  FLORIDA                     REP ORG  017  LAB  423001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I42602 NO2      5
  PARS       (  60)    -4    -4      -6    -6      -3    +3      -5    -5
                     ( -8) (+11)   ( -8) (+10)   ( -3) ( +4)

I42401 SO2      5
  PARS       (  59)                  -17    +3     -20   +13      +0    +0
                     (-25) ( +7)   (-15) ( +4)   (-15) ( +5)

I12128 LEAD    12
  PARS       (  12)   -12    +6      -6    +6      -8    +5
                     ( -9) ( +1)   (-10) ( +4)

I11101 HIV     27
  PARS       (  15)                  -2   +11
                                   ( -8) (+10)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  04  STATE  10  FLORIDA                     REP ORG  018  LAB  423002

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                        LOW    UP        LOW    UP        LOW    UP        LOW    UP

I12128 LEAD    12       -10    -8        -12    -7        -12   -10
   PARS      (  11)    (-18) (+17)      ( -5) ( +3)

REGION  04  STATE  11  GEORGIA                     REP ORG  010  LAB  321001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                        LOW    UP        LOW    UP        LOW    UP        LOW    UP

I12128 LEAD    12        -8    -1         -7    +0        -10    +4
   PARS      (  12)    ( -2) ( +1)      ( -4) ( +2)

I11101 HIV      8                         -1    +6
   PARS      (  51)                     ( -5) (+13)

REGION  04  STATE  18  KENTUCKY                    REP ORG  001  LAB  316001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                        LOW    UP        LOW    UP        LOW    UP        LOW    UP

I11101 HIV     18                         -1    +8
   PARS      ( 155)                     ( -5) ( +9)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984
REGION  04  STATE  18  KENTUCKY                      REP ORG  001  LAB  316007

                   ---------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       12      -7    +2      -3    +5      -2    +4
  PARS     (   23)   (-24) (+14)  ( -6) ( +5)  ( -5) ( +5)

I12128 LEAD     12      -7    -3     -10    +0     -20    +4
  PARS     (   12)   (-22) (+14)  ( -5) ( +4)
REGION  04  STATE  18  KENTUCKY                      REP ORG  002  LAB  416001

                   ---------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I12128 LEAD     12      -6   +29     -15   +28     -11   +29
  PARS     (   12)   (-11) (+13)  ( -7) (+13)

I11101 HIV      19                    -5   +10
  PARS     (   17)                (-10) ( +5)
REGION  04  STATE  25  MISSISSIPPI                   REP ORG  100  LAB  322002

                   ---------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO        3      -2    -2      +1    +1      +1    +1
  PARS     (    4)   (-15) ( +7)  ( -7) ( +4)  ( -7) ( +8)

I12128 LEAD     12     -43   +53     -15   +10      -2    +0
  PARS     (   23)   ( -9) (+12)  ( -4) (+10)

I11101 HIV      13                    +0   +11
  PARS     (   24)                ( -6) ( +9)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  04  STATE  34  NORTH CAROLINA          REP ORG  001  LAB  318001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                      LOW    UP    LOW    UP    LOW    UP    LOW    UP

I11101 HIV    69                   -12   +18
   PARS     ( 219)               ( -6) ( +5)

REGION  04  STATE  34  NORTH CAROLINA          REP ORG  001  LAB  318004

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                      LOW    UP    LOW    UP    LOW    UP    LOW    UP

C42101 CO      9       -6    +5     -5    +2     -5    -1
   PARS     (  14)   (-10) ( +7)  ( -7) ( +4)  ( -5) ( +2)

REGION  04  STATE  34  NORTH CAROLINA          REP ORG  002  LAB  418003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                      LOW    UP    LOW    UP    LOW    UP    LOW    UP

I11101 HIV     9                    -6    +0
   PARS     (  15)                ( -5) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  04  STATE  34  NORTH CAROLINA          REP ORG  003  LAB  418006

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO     15      -15    +3      -3     +3      -1     +2
   PARS     (  22)   (-10) ( +6)   ( -4) ( +4)   ( -4) ( +3)

I11101 HIV    31                     -2     +6
   PARS     (  26)                 ( -3) ( +7)

REGION  04  STATE  34  NORTH CAROLINA          REP ORG  004  LAB  418008

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    23                     -6     +9
   PARS     (   8)                 ( -3) ( +8)

REGION  04  STATE  42  SOUTH CAROLINA          REP ORG  001  LAB  320001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I12128 LEAD   12      -37   +11      -34    +6      -42   +10
   PARS     (  12)   ( -2) ( +6)   ( -2) ( +6)

I11101 HIV    12                     +3     +7
   PARS     ( 250)                 ( -3) ( +3)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984
REGION  04  STATE  44  TENNESSEE                  REP ORG  001  LAB  317001

                   ----------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1      LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP    LOW    UP     LOW    UP     LOW    UP

I12128 LEAD    12      -16    +1    -10    +3     -3     -1
   PARS     (  21)    (-13) ( +5)  (-13) ( +5)

I11101 HIV      6                    +0    +8
   PARS     ( 218)                 ( -6) (+10)

REGION  04  STATE  44  TENNESSEE                  REP ORG  002  LAB  417004

                   ----------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1      LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP    LOW    UP     LOW    UP     LOW    UP

C42101 CO       9       -8    +1     -1    +2     -2    +1
   PARS     (  35)    (-12) (+12)  ( -8) ( +8)  ( -8) ( +7)

I12128 LEAD     6      -25   +14    -21   +18    -11    +0
   PARS     (  12)    (-16) (+18)  (-15) (+14)

I11101 HIV      5                    -2    +2
   PARS     (  77)                 ( -7) ( +4)

REGION  04  STATE  44  TENNESSEE                  REP ORG  003  LAB  417003

                   ----------------PROBABILITY LIMITS----------------
 POL.CD.     AUDITS     LEVEL 1      LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP    LOW    UP     LOW    UP     LOW    UP

I12128 LEAD    12      -40    +6     -3    +4    -34   +13
   PARS     (  61)    ( -4) ( +2)  ( -3) ( +1)

I11101 HIV     33                    +4    +6
   PARS     (  97)                 ( -5) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  04   STATE  44  TENNESSEE                   REP ORG  004  LAB  417002

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      6                    -4     +9
   PARS     (  49)                 ( -7) ( +5)

REGION  04   STATE  44  TENNESSEE                   REP ORG  005  LAB  417001

                     ---------------- PROBABILITY LIMITS -----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       3      -3     -3     +1     +1     -2     -2
   PARS     (   6)   (-10) ( +2)   ( -5) ( +2)   ( -5) ( +6)

I11101 HIV     10                    -4     +0
   PARS     (  42)                 ( -5) ( +4)

REGION  04   STATE  44  TENNESSEE                   REP ORG  006  LAB  417001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     10                    -4     +0
   PARS     (  36)                 ( -4) ( +6)
```

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGION AVERAGES

REGION 04

POL.CD.	AUDITS	PROBABILITY LIMITS							
		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42101 CO	93	-15	+5	-4	+4	-3	+4		
PARS	(160)	(-16)	(+14)	(-8)	(+8)	(-7)	(+7)		
I42602 NO2	10	-6	-1	-8	-2	-2	+2	-5	-4
PARS	(72)	(-8)	(+11)	(-7)	(+9)	(-4)	(+6)		
I42401 SO2	25			-16	+7	-20	+17	-16	+18
PARS	(132)	(-21)	(+7)	(-14)	(+5)	(-14)	(+6)		
I12128 LEAD	150	-25	+18	-16	+11	-20	+12		
PARS	(235)	(-10)	(+9)	(-7)	(+6)				
I11101 HIV	591			-13	+16				
PARS	(2141)			(-6)	(+7)				

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  05  STATE  14  ILLINOIS                    REP ORG  001  LAB  328001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3      +4     +4      +3     +3      +4     +4
   PARS     (    6)   (-14) ( +6)   ( -8) ( +6)   ( -5) ( +5)

I12128 LEAD     12      -6     +6      -5     -1     -10     +6
   PARS     (   12)   ( -8) (+11)   ( -5) ( +3)

I11101 HIV       8                     -3    +13
   PARS     (   70)                 ( -6) ( +8)

REGION  05  STATE  14  ILLINOIS                    REP ORG  002  LAB  428002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I42602 NO2       5      -5     -5      -7     -7      -5     +8      -6     -6
   PARS     (   22)   ( -4) ( +6)   ( -1) ( +3)   ( -4) ( +8)

I12128 LEAD      6     -13    +28      -6     -6     -81    +81
   PARS     (   12)   ( -3) ( +5)   ( -2) ( +2)

I11101 HIV      15                     -4     +7
   PARS     (   35)                 (-14) ( +5)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                            DATA SELECTED FOR YEAR 1984

REGION  05  STATE  14  ILLINOIS                   REP ORG  003  LAB  428003

                       ----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2       LEVEL 3        LEVEL 4
                      LOW     UP     LOW    UP     LOW    UP      LOW    UP

C42101 CO       6      +0   +13       +4    +8      +4    +4
   PARS     (    7)  ( -8) ( +7)    ( -2) ( +4)   ( -1) ( +4)

I42602 NO2      5      -2    -2       -3    -3      -2    +0       -6    -6
   PARS     (   25)  ( -3) ( +7)    ( -5) ( +5)   ( -5) ( +4)

I12128 LEAD    12      -8    +0       -5    +0      -7    +1
   PARS     (   12)  (-11) (+17)    (-10) ( +8)

I11101 HIV      4                     -8    +5
   PARS     (   17)                 (-11) ( +7)

REGION  05  STATE  15  INDIANA                    REP ORG  001  LAB  329001

                       ----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2       LEVEL 3        LEVEL 4
                      LOW     UP     LOW    UP     LOW    UP      LOW    UP

I11101 HIV      5                    -15    +5
   PARS     (   35)                 ( -3) ( +4)

REGION  05  STATE  15  INDIANA                    REP ORG  001  LAB  329002

                       ----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2       LEVEL 3        LEVEL 4
                      LOW     UP     LOW    UP     LOW    UP      LOW    UP

C42101 CO       6     -19   -19       +1    +2      +1    +5
   PARS     (    9)  (-28) ( +3)    ( -2) ( +5)   ( -2) ( +6)

I12128 LEAD    12      -8    +3       -3    -1      -9    +4
   PARS     (   23)                 ( -8) ( +8)
```

(continued)

TABLE E-1. (Continued)

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ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  05  STATE  15  INDIANA                       REP ORG  002  LAB  429002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      3       -2    -2      +5    +5      +4    +4
   PARS    (   3)   (-10) ( +2)   ( -8) ( +8)   ( -8) ( +8)

I11101 HIV     6                    -14    +5
   PARS    (  33)                 ( -8) ( +9)

REGION  05  STATE  15  INDIANA                       REP ORG  003  LAB  429007

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    18                     -6    +3
   PARS    (  16)                 ( -7) ( +9)

REGION  05  STATE  15  INDIANA                       REP ORG  005  LAB  429005

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    11                     -6    +0
   PARS    (  33)                 ( +0) ( +3)
```

(continued)

TABLE E-1. (Continued)

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ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  05  STATE  15  INDIANA                      REP ORG  008  LAB  429004

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       27       -7    -2      -1    +2      -1    +5
   PARS     (   11)   ( -4) ( +0)   ( -2) ( +3)   ( -2) ( +5)

I11101 HIV      10                     -3    +2
   PARS     (   15)                 ( -2) ( +2)

REGION  05  STATE  23  MICHIGAN                     REP ORG  001  LAB  326001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       15      -17    +7      -2    +3      -3    +1
   PARS     (    8)   ( -9) (+12)   ( -8) ( +6)   ( -9) ( +3)

I12128 LEAD     12      -19    -5     -15    -4      -8    -5
   PARS     (   47)   (-12) ( +4)   (-13) ( +4)

I11101 HIV      23                     -8    +1
   PARS     (   73)                 ( -5) ( +6)

REGION  05  STATE  23  MICHIGAN                     REP ORG  002  LAB  426001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        9      -23   +32     -93   +67      +0    +5
   PARS     (    8)   (-15) (+18)   ( -5) ( +4)   ( -2) ( +3)

I12128 LEAD     12      -27   +32     -12    +4     -17    +7
   PARS     (   18)   ( -4) ( +7)   ( -2) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  05  STATE  24  MINNESOTA                REP ORG  001  LAB  324001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO     15      -32   +20     -4    +5      -6    +6
   PARS     (  17)   (-10) (+11)  ( -5) ( +3)  ( -7) ( +2)

I12128 LEAD   12       -6    -4     -6    +2      -7    +1
   PARS     (  12)   ( -3) ( +3)  ( -3) ( +2)

I11101 HIV    16                    -6    +9
   PARS     ( 103)                ( -5) ( +5)

REGION  05  STATE  36  OHIO                     REP ORG  001  LAB  327001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      9       -6   +12     -5    +5      -5    +4
   PARS     (   3)   ( +3) ( +3)  ( -7) ( +9)  ( -5) (+11)

I12128 LEAD   12      -11    +8    -15    +0      -8    +6
   PARS     (  30)   ( -5) ( +5)  ( -5) ( +5)

REGION  05  STATE  36  OHIO                     REP ORG  002  LAB  327003

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    22                    -7    +4
   PARS     (  12)                ( -7) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                          REP ORG  003  LAB  327005

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     26                       -2     +7
   PARS      (  22)                   ( -9) ( +6)

REGION  05  STATE  36  OHIO                          REP ORG  004  LAB  327007

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      7                       -8     +6
   PARS      (  20)                   (-12) (+13)

REGION  05  STATE  36  OHIO                          REP ORG  005  LAB  327006

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     19                       -4     +9
   PARS      (  12)                   ( -7) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                   DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                       REP ORG  006  LAB  427001

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6      -12   +39      -1   +19      +0   +19
   PARS      (   4)   (-17) (+13)   (-15) ( +6)   ( -4) ( +9)

I11101 HIV     56                     -7    +1
   PARS      (  19)                 ( -6) ( +5)

REGION  05  STATE  36  OHIO                       REP ORG  007  LAB  427002

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3      -21   -21      -4    -4      -2    -2
   PARS      (   4)   (-10) ( +1)   ( -7) ( -2)   ( -4) ( -2)

I11101 HIV     41                     -1    +6
   PARS      (  16)                 ( -1) ( +6)

REGION  05  STATE  36  OHIO                       REP ORG  008  LAB  427003

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      15       +3    +5      -1    +7      -1    +6
   PARS      (   4)   (-20) (+15)   (-12) (+11)   (-14) (+15)

I11101 HIV     29                     -6   +10
   PARS      (  36)                 ( -3) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984
REGION  05  STATE  36  OHIO
                                              REP ORG  009  LAB  427004
                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       6       -9    +3      -1    -1       -1    +1
  PARS       (  2)   (-10) (+10)   ( -1) ( -1)    ( -8) ( +0)
I11101 HIV     26
  PARS       ( 33)                    -22   +14
                                   ( -8) ( +9)
REGION  05  STATE  36  OHIO
                                              REP ORG  010  LAB  427005
                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       6      -28    +2      -4    -3       -3    -1
  PARS       (  4)   (-23) (+11)   ( -7) ( +3)    ( -7) ( +3)
I11101 HIV      5
  PARS       ( 25)                    +2   +11
                                   ( -7) ( +3)
REGION  05  STATE  36  OHIO
                                              REP ORG  012  LAB  427007
                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO       3      -11   -11      +0    +0       +3    +3
  PARS       (  2)   ( +6) ( +6)   (-12) (+12)    ( +0) ( +4)
I11101 HIV     43
  PARS       ( 15)                    -4    +4
                                   ( -4) ( +5)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                          REP ORG  013  LAB  427010

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    13                    -1    +6
   PARS     (  13)                (-11) ( +8)

REGION  05  STATE  36  OHIO                          REP ORG  014  LAB  427008

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    14                    -8    +6
   PARS     (  23)                (-14) ( +1)

REGION  05  STATE  36  OHIO                          REP ORG  015  LAB  427009

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      6     -10    -3      -5    +2      -4    +4
   PARS     (   4)  ( -7) ( -1)   (-11) ( +6)   (-14) (+11)

I11101 HIV    23                   -10    +8
   PARS     (  17)                (-12) (+19)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                       REP ORG  016  LAB  427012

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3        +1     +1      +0     +0      -1     -1
   PARS     (   4)    ( -5) ( +8)    ( -2) ( +4)    ( -4) ( +4)

I11101 HIV     18                      -5     +9
   PARS     (  10)                   ( -3) ( +4)

REGION  05  STATE  51  WISCONSIN                  REP ORG  001  LAB  325001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     53                      -9     +7
   PARS     (  82)                   ( -3) ( +3)

REGION  05  STATE  51  WISCONSIN                  REP ORG  001  LAB  325002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      24       -65    +44     -62    +48      -3     +7
   PARS     (   7)    ( -5) (+13)    ( -3) ( +4)    ( -8) ( +5)

I12128 LEAD    12        -9     +0      -5     +0      -9     +3
   PARS     (  24)    ( -7) ( +4)    ( -5) ( +3)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

                              REGION AVERAGES

REGION  05

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO     165      -78   +84      -39   +44      -4    +7
   PARS     ( 107)   (-14) (+12)    ( -6) ( +5)    ( -7) ( +6)

I42602 NO2     10       -7   +0       -10   +0       -5    +5       -6    -6
   PARS     (  47)   ( -3) ( +6)    ( -3) ( +4)    ( -4) ( +6)

I12128 LEAD   102      -17   +11      -11   +3      -21   +14
   PARS     ( 190)   ( -9) ( +8)    ( -9) ( +6)

I11101 HIV    511                     -10   +9
   PARS     ( 785)                  ( -7) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984
REGION  06  STATE  04  ARKANSAS                      REP ORG  002  LAB  332001

                         ---------------PROBABILITY LIMITS---------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I12128 LEAD    12      -22   +15      -12    +8      -12    +4
  PARS      (  28)   (-96) (+41)    (-40) (+25)

I11101 HIV     25                      -4   +11
  PARS      ( 116)                  ( -6) ( +5)
REGION  06  STATE  19  LOUISIANA                     REP ORG  001  LAB  334001

                         ---------------PROBABILITY LIMITS---------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6       -6    +5       +0    +2       -2   +10
  PARS      (  10)   ( -8) ( +2)    ( -9) ( +5)    ( -9) ( +9)
I42602 NO2      5       -3    -3       -5    -5       -1    +2       -4    -4
  PARS      (  17)   ( -1) ( +4)    ( +0) ( +2)    ( +0) ( +0)
I11101 HIV     20                      +1    +6
  PARS      ( 137)                  ( -4) ( +4)
REGION  06  STATE  32  NEW MEXICO                    REP ORG  001  LAB  330001

                         ---------------PROBABILITY LIMITS---------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I12128 LEAD    12       -7    +5       -9    +4       -9    +6
  PARS      (  32)   ( -7) ( +4)    ( -4) ( +5)

I11101 HIV      8                     -14   +19
  PARS      ( 135)                  ( -9) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  06  STATE  32  NEW MEXICO                   REP ORG  002  LAB  430001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO      12      -16     +8      -8     +5      -2     +2
   PARS     (  19)   (-12) ( +7)   ( -9) ( +5)   (-11) ( +4)

I11101 HIV     10                      -8     +8
   PARS     (  29)                 ( -9) ( +4)

REGION  06  STATE  37  OKLAHOMA                     REP ORG  101  LAB  331002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO       6      -23     -8     -19     +8     -10     -1
   PARS     (   2)   (-11) ( +2)   ( -7) ( -7)   ( -8) ( -2)

I12128 LEAD    12      -36     +7     -18     -6     -35     +8
   PARS     (   9)   (-22) (+26)   ( -9) ( +6)

REGION  06  STATE  37  OKLAHOMA                     REP ORG  102  LAB  431001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

I12128 LEAD    12      -78    +28     -13     -4      -9     -6
   PARS     (  12)   ( -2) ( +5)   (-10) ( +7)

I11101 HIV     12                      -7     +5
   PARS     (  14)                 ( -6) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  06  STATE  37  OKLAHOMA                    REP ORG  103  LAB  431002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW     UP      LOW     UP      LOW     UP      LOW     UP

C42101 CO       6       -7     -1       -5     +3       -2     +3
   PARS     (   9)   ( -5) ( +8)    ( -3) ( +1)    ( -1) ( +1)

I12128 LEAD    12       -3     +1       -5     +1       -1     +1
   PARS     (  16)   ( -6) ( +6)    ( -5) ( +2)

REGION  06  STATE  45  TEXAS                       REP ORG  001  LAB  333001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW     UP      LOW     UP      LOW     UP      LOW     UP

C42101 CO      12       -7     +1      -17    +17       +0    +10
   PARS     (  46)   (-23) (+29)    (-16) (+17)    (-15) (+14)

I11101 HIV     11                       -4     +6
   PARS     ( 672)                  ( -7) ( +6)

REGION  06  STATE  45  TEXAS                       REP ORG  002  LAB  433002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW     UP      LOW     UP      LOW     UP      LOW     UP

C42101 CO       6       -9     +3       +0     +8       +1    +11
   PARS     (   8)   ( -5) (+16)    (-11) (+16)    (-14) (+16)

I12128 LEAD    12       -9    +57      -52    +85      -38     +5
   PARS     (  23)   (-17) (+18)    (-15) (+15)

I11101 HIV     25                       -4     +3
   PARS     ( 113)                  ( -7) ( +9)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  06  STATE  45  TEXAS                          REP ORG  003  LAB  433001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3     -11   -11      -3    -3      -1    -1
   PARS     (   2)   ( -6) (+10)    ( -2) ( +4)    ( -6) ( +3)

I12128 LEAD    12     -12    +5      -8    +1      -9    +5
   PARS     (  24)   ( -6) ( +0)    ( -7) ( +0)

I11101 HIV     18                    -6    +7
   PARS     (  80)                  ( -3) ( +8)

REGION  06  STATE  45  TEXAS                          REP ORG  005  LAB  433005

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     19                   -11   +14
   PARS     (  25)                  ( -4) ( +4)

REGION  06  STATE  45  TEXAS                          REP ORG  006  LAB  433008

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6     -10    +9      -3    +0      -3    -3
   PARS     (   8)   ( -7) ( +7)    (-11) ( +1)    ( -7) ( +3)

I12128 LEAD     6     -12   +31     -25    +9     -26   -26
   PARS     (  14)   (-24) (+25)    ( -9) (+11)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

REGION  06  STATE  45  TEXAS                         REP ORG  007  LAB  433010

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      19                     -8    +2
   PARS     (   32)                 ( -3) ( +1)
```

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGION AVERAGES

REGION 06

POL.CD.	AUDITS	PROBABILITY LIMITS							
		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42101 CO	57	-15	+6	-10	+9	-6	+9		
PARS	(104)	(-18)	(+20)	(-14)	(+13)	(-14)	(+11)		
I42602 NO2	5	-3	-3	-5	-5	-1	+2	-4	-4
PARS	(17)	(+0)	(+3)	(+0)	(+1)	(+0)	(+0)		
I12128 LEAD	90	-79	+87	-31	+26	-48	+34		
PARS	(158)	(-42)	(+32)	(-20)	(+16)				
I11101 HIV	167			-8	+10				
PARS	(1353)			(-6)	(+6)				

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                         DATA SELECTED FOR YEAR 1984

REGION  07  STATE  16  IOWA                        REP ORG  001  LAB  436001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO         6    +37    +56     -6     +2      +0     +1
   PARS      (    2)  ( -3) ( -3)   ( -3) ( -3)   ( -2) ( -2)

I11101 HIV       23                   -16    +19
   PARS      (   16)                ( -6) ( +7)
REGION  07  STATE  16  IOWA                        REP ORG  002  LAB  436002

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO         6    -26    -23     +5     +6      +5     +9
   PARS      (    6)  ( -1) ( +3)   ( -1) ( +3)   (-11) ( +1)

I42602 NO2        5     -2     -2     -4     -4      -6     +7      -3     -3
   PARS      (    3)  ( -5) ( +3)   (-14) ( +2)   ( -4) ( +0)

I11101 HIV       19                    -3     -1
   PARS      (   20)                ( -8) ( +1)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  07  STATE  16  IOWA                         REP ORG  003  LAB  336001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                       LOW    UP        LOW    UP        LOW    UP        LOW    UP

C42101 CO       3       -5     -5        +0     +0        +0     +0
   PARS      (   4)   (-14)  ( +6)     ( -7)  ( +6)     ( -4)  ( +4)

I12128 LEAD    12      -11     +2        -8     +1       -10     -1
   PARS      (  18)   ( -8)  ( +6)     ( -7)  ( +9)

I11101 HIV     15                        +0     +9
   PARS      (  41)                    ( -6)  (+10)

REGION  07  STATE  17  KANSAS                       REP ORG  001  LAB  437003

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                       LOW    UP        LOW    UP        LOW    UP        LOW    UP

C42101 CO      12      -27     +3        -7     +5        -7     +5
   PARS      (   6)   (-20)  (+43)     ( -5)  ( +5)     ( -5)  ( +5)

I12128 LEAD    12      -14     -3        -9     -1        -6     -4
   PARS      (  24)   (-11)  ( +7)     ( -8)  ( +0)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  07  STATE  26  MISSOURI                   REP ORG  001  LAB  338001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3      -7    -7       -4    -4       -5    -5
   PARS      (   4)  (-14) (+26)    ( -5) ( +5)    (-11) ( +0)

I12128 LEAD     12     -11    +1       -8    +0       -7    -2
   PARS      (  12)  (-12) ( +7)    ( -8) ( +0)

I11101 HIV      33                     -4   +11
   PARS      (  22)                 (-11) (+13)

REGION  07  STATE  26  MISSOURI                   REP ORG  002  LAB  438004

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       15      +0   +12       -1    +6       -2    +3
   PARS      (   8)  ( -2) (+16)    ( -4) ( +9)    ( -7) ( +4)

I12128 LEAD     12     -10    -1       -7    -1      -10    +2
   PARS      (  30)  ( -3) ( +4)    ( -2) ( +3)

I11101 HIV       5                     +6   +10
   PARS      (  11)                 (-10) ( +2)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984
REGION  07  STATE  26  MISSOURI                    REP ORG  003  LAB  438003

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        6      -9    +0      +1    +1      +0    +1
   PARS     (    4)  (-35) (+32)   (-20) ( +9)   (-22) ( +5)

I11101 HIV       8                    +3   +17
   PARS     (   10)                (-11) ( +6)

REGION  07  STATE  26  MISSOURI                    REP ORG  004  LAB  438002

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I12128 LEAD     11      -9    +1     -10    +0      -6    -1
   PARS     (   12)  (-12) (+11)   (-10) ( +9)

REGION  07  STATE  26  MISSOURI                    REP ORG  004  LAB  438006

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        9      -5    +4      -4    +5      -1    +5
   PARS     (    4)  (-32) (+27)   (-19) (+11)   (-13) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                   DATA SELECTED FOR YEAR 1984

REGION  07  STATE  26  MISSOURI                   REP ORG  005  LAB  438005

                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3      +9     +9      +5     +5      +5     +5
   PARS     (   4)   (-13) (+15)   ( -4) ( +9)   ( -6) (+10)

I11101 HIV     28                     -9     +3
   PARS     (  11)                 ( -5) ( +4)

REGION  07  STATE  28  NEBRASKA                   REP ORG  001  LAB  335001

                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     16                    -17     +1
   PARS     (  21)                 (-10) (+10)

REGION  07  STATE  28  NEBRASKA                   REP ORG  002  LAB  335001

                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     16                    -17     +1
   PARS     (   4)                 ( +0) ( +9)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  07  STATE  28  NEBRASKA                   REP ORG  002  LAB  435001

                        ---------------PROBABILITY LIMITS---------------

 POL.CD.    AUDITS    LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                     LOW    UP    LOW    UP    LOW    UP    LOW    UP

I11101 HIV     4                   -3    +0
   PARS     (   4)               ( +0) ( +9)

REGION  07  STATE  28  NEBRASKA                   REP ORG  003  LAB  435003

                        ---------------PROBABILITY LIMITS---------------

 POL.CD.    AUDITS    LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                     LOW    UP    LOW    UP    LOW    UP    LOW    UP

C42101 CO      6     -16    -8     +3    +4     +1   +11
   PARS     (   4)  ( -6) ( +5)  ( -8) (+10)  ( -2) ( +1)

I12128 LEAD   11     -13    +3    -10   +15     -9   +12
   PARS     (  22)  ( -7) ( +3)  ( +0) ( +6)

I11101 HIV    36                  -13   +11
   PARS     (  20)               (-10) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

                             REGION AVERAGES

REGION  07

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO     69      -36   +35       -5    +7       -5    +8
   PARS     (  46)   (-17) (+22)    ( -9) ( +8)    (-11) ( +6)

I42602 NO2     5       -2    -2       -4    -4       -6    +7       -3    -3
   PARS     (   3)   ( -4) ( +2)    (-13) ( +1)    ( -3) ( +0)

I12128 LEAD   70      -12    +1      -11    +4      -10    +3
   PARS     ( 118)   ( -8) ( +6)    ( -7) ( +6)

I11101 HIV   203                     -12   +12
   PARS     ( 180)                  ( -9) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  08  STATE  06  COLORADO                    REP ORG  001  LAB  344001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                       LOW    UP    LOW    UP    LOW    UP    LOW    UP

C42101 CO      24      -25    +9     -7   +11     -5   +10
  PARS      (  22)   (-10) ( +6)  ( -6) (+10)  (-10) (+11)  ( -1) ( +3)

REGION  08  STATE  27  MONTANA                     REP ORG  001  LAB  339002

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                       LOW    UP    LOW    UP    LOW    UP    LOW    UP

I12128 LEAD    12      -18    -4     -9    +0    -13    +5
  PARS      (  45)   ( -3) ( +3)

I11101 HIV     15                   -11    -1
  PARS      ( 117)                ( -3) ( +3)

REGION  08  STATE  27  MONTANA                     REP ORG  003  LAB  439002

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1      LEVEL 2      LEVEL 3      LEVEL 4
                       LOW    UP    LOW    UP    LOW    UP    LOW    UP

C42101 CO       3       +5    +5     +5    +5     +6    +6
  PARS      (   3)   (-12) ( +8)  (-16) (+12)  (-18) (+16)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  08  STATE  35  NORTH DAKOTA           REP ORG  001  LAB  341001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     17                     -1    +2
   PARS     (  22)                  ( -3) ( +4)

REGION  08  STATE  46  UTAH                   REP ORG  001  LAB  340001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      15     -70    +2       -4    +5       -1    +2
   PARS     (  34)  ( -5) ( +6)     ( -3) ( +4)    ( -4) ( +4)

I12128 LEAD    11     -12    +8      -10    -2      -13    +4
   PARS     (  15)  (-12) ( +3)     (-12) (+11)

I11101 HIV      7                    -19   +13
   PARS     (  48)                  ( -6) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

                          REGION AVERAGES

REGION  08

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO     42     -87   +97      -6    +9       -4    +8
   PARS     (  59)  ( -8) ( +7)    ( -6) ( +8)    ( -7) ( +8)    ( +0) ( +2)

I12128 LEAD   23     -19    +6     -10    -1      -12    +3
   PARS     (  60)  ( -8) ( +6)    (-12) (+11)

I11101 HIV    39                   -10    +4
   PARS     ( 187)                ( -4) ( +3)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

REGION  09  STATE  03  ARIZONA                    REP ORG  100  LAB  347001

                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        9      -13    +5      +0    +1      -2    +3
   PARS      (   8)   (-19) ( +5)   (-11) ( +5)   ( -6) ( +6)   ( -1) ( +3)

I12128 LEAD     12       -7    +0      -6    +0     -10    +4
   PARS      (  19)   ( -9) ( +4)   ( -6) ( +3)

I11101 HIV       7                     -7   +13
   PARS      (  26)                 (-12) ( +9)

REGION  09  STATE  03  ARIZONA                    REP ORG  200  LAB  447001

                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       18      -34   +14     -23   +13      -4    +6
   PARS      (   6)   (-25) (+11)   ( -2) ( +2)   ( -3) ( +5)

I12128 LEAD     12      -19   +17     -13    +7     -18    +9
   PARS      (  12)   ( -8) ( +6)   ( -6) ( +8)

I11101 HIV      34                    -13   +15
   PARS      (  25)                 ( -9) (+11)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  09  STATE  03  ARIZONA                  REP ORG  300  LAB  447002

                    ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO       6      -9    +10       -5    +4        -1    +1
   PARS     (   2)   ( -5) ( +7)     ( -3) ( +1)     ( -4) ( +0)

I12128 LEAD    12     -35    +42      -17    +6       -10    +0
   PARS     (  10)   ( -4) ( +4)     ( -3) ( +2)

I11101 HIV     14                     -23    +9
   PARS     (  16)                   ( -7) ( +6)

REGION  09  STATE  05  CALIFORNIA               REP ORG  001  LAB  345002

                    ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV     39                     -12    +9
   PARS     (  77)                   ( -9) ( +7)

REGION  09  STATE  05  CALIFORNIA               REP ORG  001  LAB  345003

                    ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO       6     -27    +8        -2    +0        -1    +0
   PARS     (  33)   ( -9) (+11)     ( -6) ( +6)     ( -7) ( +6)

I12128 LEAD    18     -13    +5        -5    +4        -6    +3
   PARS     (  28)                   (-11) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY  EMSL PRECISION/ACCURACY REPORTING SYSTEM
           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984
REGION  09  STATE  05  CALIFORNIA                  REP ORG  001  LAB  445016
                     ----------------PROBABILITY LIMITS-----------------
POL.CD.     AUDITS    LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO     21     -16    +12      -5     +4      -4     +3
  PARS      (  33)  ( -9) (+11)   ( -6) ( +6)   ( -7) ( +6)
REGION  09  STATE  05  CALIFORNIA                  REP ORG  004  LAB  445001
                     ----------------PROBABILITY LIMITS-----------------
POL.CD.     AUDITS    LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42101 CO      3      -1     -1      +1     +1      +0     +0
  PARS      (  31)  ( -7) ( +5)   ( -2) ( +2)   ( -3) ( +1)
I12128 LEAD   12     -36    +11     -11     +4     -14     +3
  PARS      (  12)  ( -9) ( +0)   ( -3) ( +4)
I11101 HIV     4                     -6     -6
  PARS      (  41)                ( -5) ( +6)
REGION  09  STATE  05  CALIFORNIA                  REP ORG  036  LAB  445003
                     ----------------PROBABILITY LIMITS-----------------
POL.CD.     AUDITS    LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP
I11101 HIV    12                     -9     +7
  PARS      (  12)                ( -7) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

        COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

REGION  09  STATE  05  CALIFORNIA                REP ORG  036  LAB  445005

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP     LOW    UP      LOW    UP      LOW    UP

C42101 CO      21      -1   +11      +1    +5       -1    +4
   PARS     (  10)   (-12) ( +8)  ( -6) ( +4)    ( -7) ( +2)    ( -7) ( +1)

REGION  09  STATE  05  CALIFORNIA                REP ORG  061  LAB  445002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP     LOW    UP      LOW    UP      LOW    UP

I11101 HIV      2                    -15   +12
   PARS     (  34)                  (-11) ( +7)

REGION  09  STATE  05  CALIFORNIA                REP ORG  061  LAB  445018

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP     LOW    UP      LOW    UP      LOW    UP

C42101 CO      21     -22   +20     -25   +21      -27   +21
   PARS     (  25)   ( -5) (+11)  ( -3) ( +8)    ( -4) ( +5)

I12128 LEAD    12      -9    +1     -11    +8       -6    +3
   PARS     (  12)   (-12) (+17)  ( -8) ( +8)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984
REGION  09  STATE  12  HAWAII                        REP ORG  120  LAB  348001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I42401 SO2      5                   -12    +2      -9    +5      +2    +2
  PARS      (  58)  ( -5) ( +4)   ( -2) ( +3)   ( +0) ( +0)

I11101 HIV      2                    +0    +3
  PARS      (  40)                ( -8) ( +8)

REGION  09  STATE  29  NEVADA                        REP ORG  100  LAB  346001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     20                   -24   +26
  PARS      (   9)                (-16) (+10)

REGION  09  STATE  29  NEVADA                        REP ORG  200  LAB  446001

                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       9     +11   +11      +2    +4      +2    +3
  PARS      (   8)  ( -7) ( +3)   ( -2) ( +2)   ( -1) ( +1)

I11101 HIV     28                    -6    +6
  PARS      (  70)                ( -7) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                           DATA SELECTED FOR YEAR 1984

                              REGION AVERAGES

REGION  09

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO     114     -20   +17     -13   +13     -10   +10
   PARS     ( 156)   (-11) (+12)   ( -5) ( +6)   ( -5) ( +4)   ( -7) ( +6)

I42401 SO2      5                   -12    +2      -9    +5      +2    +2
   PARS     (  58)   ( -4) ( +3)   ( -2) ( +2)   ( +0) ( +0)

I12128 LEAD    78     -23   +16     -11    +5     -11    +4
   PARS     (  93)   (-10) ( +7)   ( -7) ( +6)

I11101 HIV    162                   -19   +17
   PARS     ( 350)                 ( -8) ( +7)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984
REGION  10  STATE  02  ALASKA                      REP ORG  020  LAB  451001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     5                      -5    +7
   PARS     (  17)                  ( -8) ( +5)
REGION  10  STATE  02  ALASKA                      REP ORG  020  LAB  451002

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO     18      -14    -1       -5    +4       -2    +3
   PARS     (  12)  ( -3) ( +2)   ( -6) ( +5)   ( -8) ( +4)
REGION  10  STATE  38  OREGON                      REP ORG  001  LAB  353001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    23                      -8    +4
   PARS     ( 315)                  ( -5) ( +4)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  10  STATE  38  OREGON                      REP ORG  001  LAB  453001

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       27      -13   +13      +0    +5       -2    +2
   PARS     (  44)    (-15) ( +4)   ( -9) ( +5)    ( -8) ( +1)

I12128 LEAD     12       -7    +2      -7    +2       -6    -3
   PARS     (  12)    ( -6) (+13)   ( -4) (+10)

REGION  10  STATE  49  WASHINGTON                  REP ORG  001  LAB  352001

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      79                     -11    +8
   PARS     (  40)                  ( -4) ( +6)

REGION  10  STATE  49  WASHINGTON                  REP ORG  001  LAB  452006

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3       +2    +2      +0    +0       +0    +0
   PARS     (  48)    ( -8) ( +9)   ( -8) ( +7)    ( -9) ( +7)    (-14) (+10)

I12128 LEAD     12      -15    +6     -13    +9       -4    +2
   PARS     (   5)    ( -6) ( +6)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                          DATA SELECTED FOR YEAR 1984

                              REGION AVERAGES

REGION  10

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      48       -15   +10      -3     +5      -2     +2
   PARS     ( 104)     (-12) ( +7)   ( -8) ( +5)   ( -8) ( +4)   (-13) ( +9)

I12128 LEAD    24       -11    +4     -10     +6      -6     +1
   PARS     (  17)     ( -7) (+12)   ( -6) (+12)

I11101 HIV    107                     -10     +9
   PARS     ( 372)                   ( -5) ( +4)
```

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

NATIONAL AVERAGES

		PROBABILITY LIMITS							
POL.CD.	AUDITS	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42101 CO	771	-9	+12	-20	+21	-7	+8		
PARS	(974)	(-14)	(+13)	(-8)	(+8)	(-8)	(+7)	(-10)	(+8)
I42602 NO2	30	-5	-1	-7	-2	-3	+4	-7	-3
PARS	(139)	(-6)	(+8)	(-6)	(+7)	(-4)	(+5)		
I42401 SO2	30			-15	+6	-18	+15	-14	+16
PARS	(190)	(-18)	(+8)	(-12)	(+6)	(-12)	(+6)		
I12128 LEAD	723	-35	+30	-17	+11	-22	+14		
PARS	(1259)	(-17)	(+15)	(-11)	(+10)				
I11101 HIV	2447			-15	+18				
PARS	(6559)			(-6)	(+7)				

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGIONAL SUMMARY

POL.CD. 42101 CARBON MONOXIDE

		----------------PROBABILITY LIMITS----------------							
REGION	AUDITS	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
01	30	-15	+10	-2	+3	-23	+16		
PARS	(55)	(-7)	(+11)	(-6)	(+6)	(-5)	(+5)		
02	75	-18	+6	-4	+7	-3	+6		
PARS	(89)	(-7)	(+7)	(-4)	(+5)	(-4)	(+4)		
03	78	-18	+11	-4	+5	-4	+4		
PARS	(94)	(-12)	(+9)	(-9)	(+8)	(-11)	(+12)		
04	93	-15	+5	-4	+4	-3	+4		
PARS	(160)	(-16)	(+14)	(-8)	(+8)	(-7)	(+7)		
05	165	-78	+84	-39	+44	-4	+7		
PARS	(107)	(-14)	(+12)	(-6)	(+5)	(-7)	(+6)		
06	57	-15	+6	-10	+9	-6	+9		
PARS	(104)	(-18)	(+20)	(-14)	(+13)	(-14)	(+11)		
07	69	-36	+35	-5	+7	-5	+8		
PARS	(46)	(-17)	(+22)	(-9)	(+8)	(-11)	(+6)		
08	42	-87	+97	-6	+9	-4	+8		
PARS	(59)	(-8)	(+7)	(-6)	(+8)	(-7)	(+8)	(+0)	(+2)
09	114	-20	+17	-13	+13	-10	+10		
PARS	(156)	(-11)	(+12)	(-5)	(+6)	(-5)	(+4)	(-7)	(+6)
10	48	-15	+10	-3	+5	-2	+2		
PARS	(104)	(-12)	(+7)	(-8)	(+5)	(-8)	(+4)	(-13)	(+9)

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                          DATA SELECTED FOR YEAR 1984

                               REGIONAL SUMMARY

POL.CD.  42602   NITROGEN DIOXIDE

                    ----------------PROBABILITY LIMITS-----------------
REGION      AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

   04          10     -6    -1      -8    -2      -2    +2      -5    -4
   PARS     (  72)  ( -8) (+11)   ( -7) ( +9)   ( -4) ( +6)

   05          10     -7    +0     -10    +0      -5    +5      -6    -6
   PARS     (  47)  ( -3) ( +6)   ( -3) ( +4)   ( -4) ( +6)

   06           5     -3    -3      -5    -5      -1    +2      -4    -4
   PARS     (  17)  ( +0) ( +3)   ( +0) ( +1)   ( +0) ( +0)

   07           5     -2    -2      -4    -4      -6    +7      -3    -3
   PARS     (   3)  ( -4) ( +2)   (-13) ( +1)   ( -3) ( +0)
```

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

                           REGIONAL SUMMARY
POL.CD.  42401   SULFUR DIOXIDE

                  ---------------PROBABILITY LIMITS----------------
REGION     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP
  04          25
  PARS     ( 132)   (-21) ( +7)     -16    +7      -20   +17      -16   +18
                                   (-14) ( +5)    (-14) ( +6)
  09           5
  PARS     (  58)   ( -4) ( +3)     -12    +2       -9    +5       +2    +2
                                   ( -2) ( +2)    ( +0) ( +0)
```

(continued)

TABLE E-1. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGIONAL SUMMARY

POL.CD. 12128 LEAD

		PROBABILITY LIMITS							
REGION	AUDITS	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
01	60	-14	+5	-17	+14	-9	+5		
PARS	(83)	(-10)	(+9)	(-11)	(+10)				
02	42	-19	+17	-18	+13	-13	+13		
PARS	(63)	(-10)	(+17)	(-7)	(+15)				
03	84	-14	+7	-10	+6	-9	+2		
PARS	(242)	(-11)	(+10)	(-10)	(+9)				
04	150	-25	+18	-16	+11	-20	+12		
PARS	(235)	(-10)	(+9)	(-7)	(+6)				
05	102	-17	+11	-11	+3	-21	+14		
PARS	(190)	(-9)	(+8)	(-9)	(+6)				
06	90	-79	+87	-31	+26	-48	+34		
PARS	(158)	(-42)	(+32)	(-20)	(+16)				
07	70	-12	+1	-11	+4	-10	+3		
PARS	(118)	(-8)	(+6)	(-7)	(+6)				
08	23	-19	+6	-10	-1	-12	+3		
PARS	(60)	(-8)	(+6)	(-12)	(+11)				
09	78	-23	+16	-11	+5	-11	+4		
PARS	(93)	(-10)	(+7)	(-7)	(+6)				
10	24	-11	+4	-10	+6	-6	+1		
PARS	(17)	(-7)	(+12)	(-6)	(+12)				

(continued)

TABLE E-1. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                           DATA SELECTED FOR YEAR 1984

                                 REGIONAL SUMMARY

POL.CD.  11101   HI VOLATILE

                      ----------------PROBABILITY LIMITS------------------

REGION      AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP
   01          56                    -6    +8
   PARS     ( 346)                 ( -5) ( +7)
   02          85                    -4   +11
   PARS     ( 303)                 ( -4) ( +6)
   03         526                   -20   +33
   PARS     ( 542)                 ( -8) ( +8)
   04         591                   -13   +16
   PARS     (2141)                 ( -6) ( +7)
   05         511                   -10    +9
   PARS     ( 785)                 ( -7) ( +7)
   06         167                    -8   +10
   PARS     (1353)                 ( -6) ( +6)
   07         203                   -12   +12
   PARS     ( 180)                 ( -9) ( +8)
   08          39                   -10    +4
   PARS     ( 187)                 ( -4) ( +3)
   09         162                   -19   +17
   PARS     ( 350)                 ( -8) ( +7)
   10         107                   -10    +9
   PARS     ( 372)                 ( -5) ( +4)


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```

TABLE E-2. PARS AND PA DATA FOR SO_2 CONTINUOUS METHODS

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                    DATA SELECTED FOR YEAR 1984

REGION  01  STATE  07  CONNECTICUT               REP ORG  001  LAB  306001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     20      -10    +4      -9    +1      -8    +0
   PARS     (  22)   (-13) (+12)   ( -9) ( +9)   ( -8) ( +7)

REGION  01  STATE  20  MAINE                     REP ORG  001  LAB  301001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4       -7    -7      -5    -3      -2    -2
   PARS     (   8)   ( -2) (+10)   ( -1) ( +7)   ( -2) ( +8)

REGION  01  STATE  22  MASSACHUSETTS             REP ORG  001  LAB  304001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12       -7    +5      -3    +0      -6    +3
   PARS     (  21)   (-10) (+11)   ( -8) (+11)   (-10) (+11)

REGION  01  STATE  30  NEW HAMPSHIRE             REP ORG  001  LAB  302001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4       -4    -4      -6    -2      -4    -4
   PARS     (  65)   (-15) (+11)   (-13) ( +7)   (-12) ( +6)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                   DATA SELECTED FOR YEAR 1984

REGION  01  STATE  41  RHODE ISLAND             REP ORG  001  LAB  305001

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2       8     -13    +1      -3    +0      -4    +3
   PARS      (  16)  (-14) ( +6)  (-12) ( +5)  (-13) ( +5)

REGION  01  STATE  47  VERMONT                  REP ORG  001  LAB  303001

                   ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2       3      +3    +3      +1    +3
   PARS      (   8)  (-11) ( +2)  (-10) ( +2)  (-11) ( +4)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                     DATA SELECTED FOR YEAR 1984

REGION  02  STATE  31  NEW JERSEY                  REP ORG  001  LAB  308001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2    16      -8     -3      -6     +0      -4     +2
   PARS     (  34)  ( -8) (+10)   ( -7) ( +8)   ( -5) ( -2)

REGION  02  STATE  33  NEW YORK                    REP ORG  001  LAB  307001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2    12     -18    +27      -8    +13      -6     +7
   PARS     ( 205)  (-10) (+12)   ( -8) (+10)   ( -8) ( +9)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                        DATA SELECTED FOR YEAR 1984

REGION  03  STATE  08  DELAWARE                    REP ORG  001  LAB  313002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      12     -10    -4      -12    +8      -14   +10
   PARS      (   8)  ( +0) ( +6)    ( -4) ( +9)    ( -4) ( +3)

REGION  03  STATE  21  MARYLAND                    REP ORG  001  LAB  312001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      20     -17   +17       -2   +13       +2   +10
   PARS      (  26)  (-10) ( +5)    (-10) ( +6)    (-12) ( +8)

REGION  03  STATE  39  PENNSYLVANIA                REP ORG  001  LAB  311002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      12     -25   +11      -13    +5      -12    +5
   PARS      (  33)  (-14) (+14)    (-13) (+11)    (-11) (+10)

REGION  03  STATE  39  PENNSYLVANIA                REP ORG  002  LAB  411002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      12      -4    +2       +1    +4       +1    +6
   PARS      (  34)  ( -6) ( +3)    ( -7) ( +5)    ( -7) ( +7)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  03  STATE  39  PENNSYLVANIA              REP ORG  003  LAB  411001

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4      +20   +20     +8    +9     +7    +7
   PARS     (   8)   (-15) ( +7)  (-15) ( +9)  (-13) ( +8)

REGION  03  STATE  48  VIRGINIA                  REP ORG  003  LAB  415004

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     16      -10    -1     -9    +2    -10    +3
   PARS     (  26)   ( -6) ( +4)  ( -6) ( +7)  ( -6) (+10)

REGION  03  STATE  50  WEST VIRGINIA             REP ORG  001  LAB  314001

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4       -1    -1     -2    +0     -1    -1
   PARS     (  24)   (-12) (+10)  ( -5) ( +9)  ( -7) ( +7)  ( -5) ( +2)

REGION  03  STATE  50  WEST VIRGINIA             REP ORG  002  LAB  314002

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4       -1    -1     +0    +3     +2    +2
   PARS     (  24)   (-12) (+11)  ( -6) ( +9)  ( -7) ( +7)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  04   STATE  10  FLORIDA                       REP ORG  011  LAB  423003

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2       8     -19   -11      -18    -6      -20    -4
   PARS      (  18)  (-23) (+17)    (-20) (+18)    (-19) (+21)

REGION  04   STATE  10  FLORIDA                       REP ORG  012  LAB  423004

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2       8      +2   +14       +4   +10       +4    +6
   PARS      (   9)  (-13) (+11)    ( -6) (+10)    ( -9) ( +8)    ( -8) ( +3)

REGION  04   STATE  10  FLORIDA                       REP ORG  013  LAB  423016

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      17      -9   +22       -5   +10       -6    +9       +2    +2
   PARS      (  10)  (-19) ( +9)    (-14) ( +7)    (-15) (+10)

REGION  04   STATE  18  KENTUCKY                      REP ORG  002  LAB  416001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      12      +0    +4       -1    +2       -2    +1
   PARS      (   6)  ( -5) (+12)    ( -7) (+13)    ( -8) (+11)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  04   STATE  34  NORTH CAROLINA              REP ORG  001  LAB  318001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2     18       -28   +36       -26   +30       -27   +30       +12   +12
  PARS      (  24)    (-12) (+11)     ( -7) ( +8)     ( -7) ( +9)

REGION  04   STATE  34  NORTH CAROLINA              REP ORG  003  LAB  418006

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      4        -6    -6        -7    -6        -7    -7
  PARS      (   5)    (-19) ( +7)     (-25) ( +7)     (-20) ( +9)

REGION  04   STATE  42  SOUTH CAROLINA              REP ORG  001  LAB  320001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      6       -24   -24        -3    +5        +2    +7
  PARS      (  69)    (-15) (+11)     (-10) (+12)     (-11) ( +9)

REGION  04   STATE  44  TENNESSEE                   REP ORG  001  LAB  317001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2     14       -18   +16       -15   +10       -15   +10       -17    +6
  PARS      (  17)    (-14) ( +9)     ( -9) ( +8)     ( -8) ( +8)     ( -5) ( +4)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                      DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                       REP ORG  003  LAB  327005

                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     8     -19   +13     -15    +9     -20   +13
  PARS     (   4)   (-13) (+14)   (-19) (+18)   (-20) (+23)

REGION  05  STATE  36  OHIO                       REP ORG  004  LAB  327007

                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     6     -81    +2     -76   +49     -72   +31
  PARS     (   3)   ( -9) (+21)   (-10) (+22)   ( -6) (+22)

REGION  05  STATE  36  OHIO                       REP ORG  006  LAB  427001

                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2    12     -31   +22     -18   +14      -7    -5
  PARS     (   4)   (-13) ( +1)   (-11) (+10)   ( -9) (+13)

REGION  05  STATE  36  OHIO                       REP ORG  007  LAB  427002

                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     8      -6   +19      -4   +12      -8   +19
  PARS     (   4)   (-11) ( +8)   ( -9) ( +5)   ( -7) ( +4)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                   DATA SELECTED FOR YEAR 1984

REGION  05  STATE  36  OHIO                         REP ORG  008  LAB  427003

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      12      -5     +7      -2     +5      -2     +4
   PARS       (  8)   ( -9) ( +9)   ( -7) ( +7)   ( -8) (+12)

REGION  05  STATE  36  OHIO                         REP ORG  012  LAB  427007

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2       8      -3    +20      -4    +18      -1    +11
   PARS       (  4)   (-10) ( +5)   ( -6) ( +5)   ( -8) ( +7)

REGION  05  STATE  36  OHIO                         REP ORG  013  LAB  427010

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2       8     -29    +19     -19     +8     -16     +9
   PARS       (  4)   (-13) (+17)   ( -4) (+12)   ( -7) (+12)

REGION  05  STATE  36  OHIO                         REP ORG  016  LAB  427012

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.      AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2       4     -16    -16     -19    -17     -20    -20
   PARS       (  4)   (-25) ( +8)   (-24) (+13)   (-21) (+13)
```

(continued)

TABLE E-2. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

REGION 05 STATE 51 WISCONSIN REP ORG 001 LAB 325001

		----------------PROBABILITY LIMITS-----------------							
POL.CD.	AUDITS	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42401 SO2	8	-48	+32	-24	+12	-20	+10		
PARS	(26)	(-11)	(+14)	(-12)	(+11)	(-12)	(+9)	(-8)	(+2)

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                       DATA SELECTED FOR YEAR 1984

REGION  06   STATE  32  NEW MEXICO                  REP ORG  001  LAB  330001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     14       -34    +5      -25    +0      -28    +2      -14    -5
   PARS     (  30)    (-16) (+15)    (-10) (+10)    ( -9) (+10)

REGION  06   STATE  37  OKLAHOMA                    REP ORG  101  LAB  331001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4        +7    +7       +4    +5       +3    +3
   PARS     (   2)    (-17) ( -6)    (-20) ( -6)    (-16) ( -9)
```

(continued)

TABLE E-2. (Continued)

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ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                          DATA SELECTED FOR YEAR 1984

REGION  09  STATE  05  CALIFORNIA                   REP ORG  036  LAB  445003

                          ----------------PROBABILITY LIMITS-----------------

 POL.CD.      AUDITS       LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                          LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      15        -38    +25      -29    +21      -31    +24      -31    +26
   PARS       (  6)     (-20) ( +7)     (-17) ( +9)     (-15) (+14)
```

(continued)

TABLE E-2. (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
                         DATA SELECTED FOR YEAR 1984

                              REGIONAL SUMMARY

POL.CD.  42401   SULFUR DIOXIDE

                      ---------------PROBABILITY LIMITS---------------

REGION      AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

  01           51     -10    +5      -8    +2      -7    +2
  PARS      ( 140)   (-13) (+10)   (-11) ( +8)   (-11) ( +7)   ( +0) ( +0)

  02           28     -18   +16      -9    +8      -5    +4
  PARS      ( 239)   ( -9) (+11)   ( -7) ( +9)   ( -8) ( +8)   ( +0) ( +0)

  03           84     -17   +13     -10   +11      -9   +11
  PARS      ( 183)   (-11) ( +8)   ( -9) ( +8)   ( -8) ( +8)   ( -4) ( +1)

  04           87     -23   +23     -16   +16     -16   +15     -15   +21
  PARS      ( 158)   (-15) (+11)   (-12) (+12)   (-12) (+10)   ( -6) ( +4)

  05           74     -30   +30     -22   +17     -25   +17
  PARS      (  61)   (-14) (+13)   (-12) (+12)   (-12) (+12)   ( -7) ( +1)

  06           18     -35   +17     -27   +10     -29   +11     -14    -5
  PARS      (  32)   (-17) (+14)   (-12) (+10)   (-11) (+11)   ( +0) ( +0)

  09           15     -38   +25     -29   +21     -31   +24     -31   +26
  PARS      (   6)   (-20) ( +7)   (-17) ( +9)   (-15) (+14)   ( +0) ( +0)
```

(continued)

TABLE E-2. (Continued)

ENVIRONMENTAL PROTECTION AGENCY EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1984

NATIONAL AVERAGES

		----------------PROBABILITY LIMITS-----------------							
POL.CD.	AUDITS	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
		LOW	UP	LOW	UP	LOW	UP	LOW	UP
C42401 SO2	357	-23	+19	-16	+14	-17	+14	-22	+20
PARS	(819)	(-13)	(+11)	(-12)	(+11)	(-12)	(+10)	(-11)	(+9)

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